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First Aid for Eye Injuries

Arno E. Town, M.D., F.A.C.S.

THE author describes efficient emergency handling of eye injuries, prior to attention by an ophthalmologist.

IN CONSIDERING the subject of first aid for eye injuries, it might be well to present a definition of first aid. Following is the definition provided by the *American Red Cross First-Aid Text-Book:*

"First aid is the immediate, temporary treatment given in case of accident or sudden illness before the services of a physician can be secured. In some cases this immediate action saves a life. In all cases, proper first-aid measures reduce suffering and place the patient in the physician's hands in a better condition to receive treatment. The duty of the first aider ends where the physician's begins, and there should be no clash of interest between the physician and the first aider."

Foreign Body in the Eye

The most frequent injury to which the eyes may be subjected is due to foreign bodies. They may lodge in the skin, under the lids, or be imbedded in the outer tissues of the eyeball. They are almost always painful and should be removed as soon as possible. Often they are difficult to locate. First the lower lid should be pulled down, and a search made for a foreign body.

Most people do not know how or are awkward in trying to evert lids. Sometimes they may even do more harm than good, and it is better, whenever possible, to obtain the aid of a doctor. Lastly, the cornea should be examined under good light, using a flashlight in emergency. A foreign body which is located under the lids may be easily removed with a cotton applicator or clean tissue or edge of a clean cloth. However, if the foreign body is imbedded in the cornea, care must be exercised not to injure the delicate corneal

tissues. No attempt should be made by lay persons to remove a foreign body from the cornea. The patient should be referred as soon as possible to a doctor, who will make the procedure painless by instilling a local anesthetic, and then removing the foreign material with an instrument. After this procedure, the eye should always have a patch over it until the wound is healed.

"Black Eye"

Hemorrhage into the eyelids results from contused wounds. The appearance of the "shiner" or "black eye" as a result of blows about the eye is familiar to all. The blood and serum may travel across the bridge of the nose to produce swelling of the lids of the other eye. The prevention of extravasation of blood and serum into wounded tissues consists in the careful application of pressure and cold immediately after the injury. The devitalized tissues must not be iced or refrigerated too much, as gangrene and sloughing have been known to occur. Cold applications may be used for twenty-four to thirty-six hours, but not continually. Immediately after this initial period, when extravasation has ceased, absorption of the blood and débris is hastened by the application of warm compresses. A useful prescription for the purpose is as follows:

1. Anoint the skin around the eyes with lanolin.
2. Apply hot compresses of epsom salts (1 tablespoon to 1 pint of water) every ten minutes.
3. Apply cool compresses of sodium bicarbonate (1 teaspoon to 1 pint of water) every five minutes.
4. Eyewash with an eye-cup.

There is no point in trying to aspirate the blood as it is distributed through the soft tissues. Application of leeches, beefsteak, or other popular remedies is of little value and may be dangerous, as infection may be introduced.

Penetrating wounds of the eyeball are always serious and require immediate aid by an eye surgeon. The first-aid treatment consists in covering the eye with a sterile piece of gauze or an eye patch, which is gently fastened down with adhesive tape. The patient should recline during removal to the hospital or doctor.

Burns

Most thermal burns affect only the skin of the lids, singeing the lashes but not burning the cornea or conjunctiva, because of the rapidity of the reflex of the lids. If the effect is only on the skin, the condition will heal simply through the application of vaseline or boric ointment. If the burn is deeper or of second degree, there will usually be contraction because of the thinness of the skin of the lids. In third-degree burns, such as are seen after terrific flash burns of gasoline explosions in auto or aeroplane accidents, the explosion is so rapid that the victim has no time to close the lids; hence the conjunctiva and cornea are involved and the heat is so extreme that the skin and the lid margins may be lost, producing severe deformities.

First Aid in Chemical Eye Burns

Chemical burns, such as those due to lye, lime, acids, or various refrigerants, act similarly to those caused by heat. The chemical should be removed by neutralization if possible. Theoretically, an alkali burn—such as lye—should be washed out with a weak acid, such as boric acid (½ teaspoonful to a glass of water), or dilute vinegar (½ teaspoonful to a glass of water); and an acid burn should be washed out with a solution of baking soda. However, valuable time must not be lost in choosing the proper agent, but the corrosive should be removed by copious washing with water, if necessary, placing the eyes under a hydrant or immersing in water. After this first procedure, a doctor or a qualified nurse should look at the eyes for any remaining substance, everting the lids if necessary, as in the case of lye or lime burns, when a small particle tucked under the upper lid can do considerable damage to the cornea.

The immediate concern in the care of severe chemical burns is protection of the globe. Non-irritating oils, greases, and ointments should be used. Albolene and petrolatum, olive oil, lanolin, mixed or made up into bland ointments, are very useful. Protecting shields of metal or of the new cellulose compounds maintain the moisture of the cornea. The after-care will depend upon the indications, and should be under the guidance of an ophthalmologist.

Since serious permanent opacity often results from chemical burns, particular caution is urged in regard to domestic lye, building lime, refrigeration gases and fluids, battery acids, solvents, and paint and varnish removers. These and others should carry a special warning on the container stressing the danger to the eyes. The effect of the injury is always instantaneous and is serious if much of the caustic splashes in the eye. Often there is nothing effective that can be used to offset the action of the chemical even though the patient be seen immediately.

Ulceration of the cornea following minor trauma may be serious in its end-results of opacity and diminution of vision. The value of closure of the eye by a protective dressing for promotion of healing in the treatment of erosion of the cornea should not be forgotten. Local antiseptics are likely to be irritating to the eye and, in the concentrations in which they may be employed, are generally not very useful in destroying bacteria. It is fortunate that the tissues and secretions of the eye have a protective action in this respect, which accounts in most instances for the remarkable freedom from infection after trauma. Multiple foreign particles, as in powder burns, require several repeated efforts for complete removal.

Chemical Gas Burns

In chemical warfare certain gases will cause more damage to the eyes than to any other part of the body. These gases are phosgene, chlorine, lewisite, and mustard. In the present world conflict, if gas is used, it will probably be disseminated by aeroplane spray, and the civilian population, especially if unguarded by gas masks, will suffer.

In case of a gas attack, get out of the contaminated atmosphere or area as soon as possible. Gases tend to travel downwind. If gas has been released in your immediate vicinity by bomb explosion or spray, move upwind. If gas has been released upwind from you, move across the wind till you are out of the stream.

Most agents are heavier than air and tend to settle in hollows. Therefore, avoid low places or basements. The second story of a building is practically safe. Close doors and windows, stuffing cracks and chimneys; this will keep gas out for hours. If windows

are blown out by explosions, hang wet blankets over openings to keep gas from blowing in. The blankets should be fastened tight at the edges.

Lewisite gas in the eyes may cause blindness. Until neutralized or removed, lewisite continues to penetrate, burning through the skin into muscle or other body tissue. It differs in this respect from mustard, which never penetrates beneath the skin unless carried into a wound by contaminated shell or bomb fragments.

In contradistinction to the treatment of thermal burns of the eye, oils and ointments should never be instilled as they may absorb the gas and keep it pent up between the lids. The eyes must be treated immediately and repeatedly with irrigations of a 2 per cent solution of sodium bicarbonate or baking soda—one-half teaspoonful to a glass of water.

Tear gases are substances which produce severe but temporary eye irritation. Permanent damage rarely results. Many other chemical warfare agents also irritate the eyes but require greater concentrations than the tear gases. The tear gases, however, may cause panic in an uneducated population that does not understand their relative harmlessness and the rarity of serious after-effects.

Exposure to tear gas immediately produces spasm of the eyelids, with sensitiveness to light, inability to open the eyes, copious tearing, and some irritation to a freshly shaven face. If the solution itself gets into the eyes, there may be permanent damage.

The individual should be removed from the contaminated air and face the wind with the eyes open. If irritation is marked, the eyes may be irrigated with boric acid or a 2 per cent solution of sodium bicarbonate (baking soda). *The eyes must not be rubbed or bandaged.*

If a person has been gassed, the first-aid treatment consists in free irrigation of eyes and prompt removal of the patient to a hospital on a stretcher, as any undue exertion may prove fatal.

In conclusion, it is well to quote again from the opening paragraph, "First aid is the immediate, temporary treatment given in case of accident or sudden illness before the services of a physician can be secured," and to add the caution that whoever gives first aid should first wash hands with soap and water.

Twenty Years in Saving Sight*

Lewis H. Carris

THE author expresses the hope that the wartime psychology of generous spending will be carried over into peace time, so that funds will be available to ensure a complete conquest of blindness.

DR. JACKSON, may I salute you, as the first recipient of the Leslie Dana Medal, as the dean of ophthalmology whose vision goes far beyond what can be seen with the ophthalmoscope, and as a true and helpful friend?

In joining the distinguished group of men and women who have been awarded the Leslie Dana Medal, I am deeply conscious of the fact that they have all had a part in my attaining this great honor. It was my good fortune to enter the field of prevention of blindness at a time when the foundations were so soundly laid that it was possible to proceed by following rather closely the specifications of the founders—in particular, Louisa Lee Schuyler, Park Lewis, John M. Glenn, and Winifred and Edith Holt.

Nor can I overemphasize the debt which organized work for sight conservation and the prevention of blindness owes to the vision and wise judgment of the National Society's first managing director, Edward M. Van Cleve. Through his foresight, sound financial principles were adopted which have made it possible to maintain security even during years of depression.

Dr. Van Cleve began the pattern by carrying out the policies of one of the founders of the Society, Louisa Lee Schuyler. Miss Schuyler, who personally enlisted the interest of so many people in the movement, had firm belief in the possibility of securing support from the general public. Justification of this belief is seen in the

* Speech of acceptance of 1942 Leslie Dana Gold Medal, in St. Louis, Mo.

growth from 55 charter members in 1915, to the present enrollment of approximately 3,000 members and 18,000 contributors.

For its close advisers on technical aspects of prevention of blindness, the Society has been fortunate from the beginning in having leaders in ophthalmology, public health, education, social work, illuminating and safety engineering—among them Dr. Park Lewis, Dr. Edward Jackson, Dr. Ellice M. Alger, Dr. William Campbell Posey, Dr. George S. Derby, Preston S. Millar, Dr. Albert J. Chesley, Dr. William F. Snow, Dr. Conrad Berens, and many others. As president, William Fellowes Morgan, with the support of the Board of Directors, led the Society wisely for twenty-five years—a leadership now so ably given by Mason H. Bigelow.

I wish I could name the many capable associates I have had during my years as administrative head of the Society, but time does not permit. I shall, therefore, confine myself to specific mention of only one, who typifies the efficient, devoted service rendered by all throughout these years. Mrs. Winifred Hathaway, who came to the Society in 1916, has contributed more than can ever be measured to the cause of sight conservation and the prestige of the National Society. The Leslie Dana Medal was never more worthily bestowed than when conferred on her.

Beginnings of the Program

The chief aim of the organized prevention of blindness movement has been to translate into social action the scientific discoveries in ophthalmology and other fields which offer possibilities of saving sight. It was natural, therefore, that the outstanding campaign in the early years of the Society should have been directed toward the prevention of blindness from ophthalmia neonatorum, which had been clearly and unquestionably demonstrated as a preventable cause of blindness. Emphasis was also placed on prevention of eye injuries in industry, on establishment of sight-saving classes, and on prevention of blindness from trachoma. There is still need for concentration on these activities, partly because of the lag between discoveries that make preventive measures possible and the universal application of such procedures. Further scientific research, in some instances, and development of more effective methods of attack, in others, should hasten the solution of all of these problems.

Milestones in Scientific Development

Ophthalmia Neonatorum.—By 1890, Credé had clearly demonstrated how blindness from this cause could be prevented. However, to make this knowledge effective it was necessary to arouse public opinion to the support of mandatory legislation requiring the use of a prophylactic in the eyes of all newborn babies, as well as other control measures. The success of the educational program to enlist the co-operation of health authorities, physicians, midwives and parents can best be measured by the statistics from schools for the blind. In 1906–07, of the new pupils enrolled, 28.2 per cent were blind because of ophthalmia neonatorum. By 1921–22, this percentage had been reduced to 14.2; by 1941–42, to about 7 per cent. The campaign continues, but with new hope now that the sulfa drugs can be used effectively in treatment of gonorrheal or other infection in the mother and ophthalmia in the newborn child.

Trachoma.—A campaign for the reduction of blindness from trachoma was likewise among the early activities of the Society, which is proud to have had a share in the stimulation of research into the cause or causes of this disease, as well as in the planning of diagnostic and treatment services in affected areas. Until recently, progress in this field had been steady, but slow, since the treatment practised was painful and involved extended periods of hospitalization. However, with the discovery of the sulfa drugs, which have been used so successfully in the treatment of trachoma, there is new hope for the control of this ravaging eye disease.

No mention of the sulfa products would be complete without a tribute to Dr. Gerhard Domagk, who discovered the drug. In addition to its use in treatment of ophthalmia neonatorum and trachoma, it has been found effective in most types of serious eye infection, including those associated with eye injuries, as well as some of the infectious diseases and focal infections which in the past have taken such a large toll of eyes.

Venereal Diseases.—Achievements in other health, social and scientific fields have already helped to eliminate conditions which were formerly responsible for a considerable amount of blindness. Those of us whose primary concern is the preservation of sight have, therefore, long recognized the importance of such parallel

approach to the conservation of vision. A striking example is the venereal disease program.

Perhaps the greatest advance in this field which has been made in the past twenty years has been to bring the subject of syphilis and gonorrhea into open discussion as a public health, rather than a moral, problem. The campaign against venereal disease has been further accelerated by recent developments in medical science. Thus, the sulfa derivatives are proving effective agents in the control of gonorrhea. Organized efforts to develop the social machinery for insuring early diagnosis and continued medical care are likewise essential factors in reducing blindness from syphilis and gonorrhea.

Classes for the Partially Seeing.—The first special class for education of partially seeing children who have difficulty in using the educational material provided for the normally sighted was established as long ago as 1913. By 1922 the number of these classes had risen to 144, but this type of special education was available in only 44 cities, in 11 states. In 1942, there are 630 such classes in 222 cities, 31 states, the District of Columbia, and Hawaii. A number of states now have supervision of the education of partially seeing children in rural areas where there are not enough children to justify establishment of a sight-saving class.

The preparation of teachers for this work was started experimentally in 1922; since then yearly courses have been given in various educational centers throughout the country for teachers seeking elementary or advanced training in this field. Co-operation with colleges and universities in the establishment and conduct of these courses has been an outstanding feature of the Society's program.

An important by-product of the procedures developed to conserve the vision of school children with serious eye difficulties has been the interest aroused in the eye health of all children. A Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, co-operating with the National Society, has since 1925 published several editions of a bulletin, *Conserving the Sight of School Children*, which is now generally accepted in educational circles as the guide for a program of sight conservation in school systems.

A further development has been the growing recognition of need for more adequate preparation of all prospective teachers in sight conservation, and in recent years a number of teachers' colleges have integrated such instruction in their curricula. Also in co-operation with the Society, a number of institutions of higher learning have provided for their students routine vision testing and improved lighting in study rooms, libraries and dormitories.

The subject of school lighting has been given serious consideration since the publication in 1918 of the first edition of "American Recommended Practice of School Lighting." This valuable monograph has undergone periodic revision in order to incorporate developments in the science of illuminating engineering.

Eye Protection in Industry.—The last twenty years have seen continuous progress in the reduction of blindness from disease, but there is no evidence of a similar decrease in eye injuries. Standards of industrial equipment and safety measures have been developed and improved during this period, and their effectiveness has been strikingly demonstrated by the more progressive safety departments; for instance, in ten years not one worker of the 25,000 employed by The Pullman Company lost an eye. Unfortunately, industry as a whole has been slow to realize that investment in eye protection pays dividends both in eyes saved and in lowered cost of production.

The present war emergency may be an ill wind which will bring some good because of the compelling necessity now for maintaining manpower at the highest level of efficiency. Following the conference of leaders in safety work called at the request of the President in September, 1941, a large-scale program for reduction of accidents in general took its place as an essential feature of the war effort. As one of the co-operating agencies, the Society is particularly concerned with the specific measures needed for eye protection. The new edition of *Eye Hazards in Industry*, by the late Louis Resnick, published for the Society by Columbia University Press, is being extensively used by management and safety engineers as a source of basic information for such a program. I cannot let this occasion pass without paying tribute to Mr. Resnick, who developed the Society's industrial and safety program over a period of almost twenty years.

Medical Social Service.—The Massachusetts Eye and Ear Infirmary has the distinction of being one of the pioneers in the use of medical social service in eye clinics. Later, it collaborated with the National Society in the first course for training medical social workers in this field and in the first demonstration of what might be done by such a worker to conserve the vision of patients suffering from glaucoma. This project was undertaken in 1928 at the request of the late Dr. George S. Derby, who was ophthalmic surgeon at the Massachusetts Eye and Ear Infirmary, as well as a director of the National Society.

Out of that experiment grew a program of training and placing skilled medical social workers, not only in eye hospitals and clinics, but in community services throughout the country. Since 1931, 44 workers have been trained for placement in 14 states, the District of Columbia, Hawaii, Egypt, and Japan. At the present time such courses are conducted, as need arises, in Washington University, St. Louis, under the direction of ophthalmologists and leaders in medical social work. In addition, five intensive Institutes on Eye Health, each of four-weeks' duration, have been given at the Society's headquarters as a type of "in-service" training for persons who are already functioning in some capacity as prevention of blindness agents.

The need of general social workers, and those in special services, such as child welfare, for guidance in the solution of the eye problems of their clients, has been recognized, and educational material and counsel made available.

Nursing.—The first organized service of the Society to the nursing profession was inaugurated in 1927, and followed a study in New York City of the vision of preschool children, which resulted in development of a simple technique for screening out eye difficulties seeming to require ophthalmological care. Though the early work in the nursing field was confined to demonstrating this method of vision testing, the broader needs of the public health nurse for additional information on sight conservation and prevention of blindness were soon realized. At the present time, the program includes advisory service and the provision of educational material to nurses in all fields. Special emphasis has been placed on instruction and guidance for nurses in supervisory positions, since they are

strategically placed to promote sight conservation activities in general health programs. In co-operation with the National League of Nursing Education, efforts are under way to integrate more eye teaching in the basic nursing curricula.

Orthoptic Training.—As in the case of so many of our present procedures, the beginnings of which date back a century or more, the techniques of orthoptic training for the development of binocular vision and depth perception were given new impetus in the last two decades. Notable contributions have been made, particularly in the refining of instruments used in the training and in the techniques employed.

To the average person, orthoptic training is identified with the correction of crossed eyes. However, this treatment is necessary too in perfecting the binocular vision of individuals having even slight muscular imbalance. It is fortunate that the American Orthoptic Council established standards of instruction and procedure for the increasing number of technicians who work with these patients under ophthalmological supervision. The importance of good binocular vision and depth perception has been brought home to many a patriotic young man rejected from service in the air forces. Luckily, some of them are able, after orthoptic training, to meet the visual requirements of this branch of the Service.

Corneal Transplantation.—One of the most dramatic incidents of my professional career occurred several years ago, when Dr. Ramon Castroviejo brought to the Society's office three persons whose sight had been restored by corneal transplantation. It was the first time that I had seen clear windows placed in opaque corneas, permitting the light to enter and the persons to see. Immediately there came to my mind pictures of thousands of victims of corneal opacities from ophthalmia neonatorum, injuries, etc., many of whom might now have hope of seeing.

To be strictly accurate, we must admit that keratoplasty operations, in which a section of clear cornea from a fetus, cadaver or enucleated eye is inserted to replace opaque corneal tissue, date back a century or more. The history of successful operations, however, is much more recent. It was not until 1932 that reports of refinements of the grafting operation and of success with

it gave promise of the possibilities of restoration of sight by this method.

Reattachment of Retina.—Another striking instance of the way in which developments in scientific procedures have increased the possibilities of prevention of blindness is the operation for reattachment of the retina. This can best be illustrated by quoting from one of the standard ophthalmic textbooks. Back in 1924, Dr. Charles H. May spoke of the detached retina in these terms: "Prognosis is unfavorable. The detachment tends to enlarge and to become complete. Even after improvement or reattachment, relapses are the rule, and complete blindness is the usual end." He mentioned the operative treatment, but without any enthusiasm, thus: "Trephining of the sclera over the seat of the detachment, followed by aspiration of the subretinal fluid in this situation, has also been followed by an occasional cure."

Contrast this with what Dr. May has to say about the condition in the latest edition of his book, published in 1941: "Prognosis, formerly considered practically hopeless, has become much more favorable since the introduction of operations directed to the closure of holes and tears in the retina and to the production of an adhesive inflammation at the seat of the detachment. During the past few years one-half of the cases so treated have been reported as cured."

Other authorities are even more optimistic, and it seems to be the consensus of ophthalmologists that results are unsatisfactory only when operation is not undertaken at an early stage.

Agencies Co-operating in the Prevention Program

No blanket effort has been made by the National Society to establish branches or affiliated agencies for the prevention of blindness, as such. However, any interest shown in a specific state or locality has been fostered, and all possible help given. Excellent work is being done by a number of active state and local societies for the prevention of blindness, most of them established since 1922. During the same period, such official state agencies as departments of health, welfare, education and industry have been stimulated to develop activities in prevention of blindness or sight conservation. In general, the policy of the Society has been to offer assistance to

any organized social agency having either a direct or indirect responsibility for the saving of sight.

Within the past few years, review of the ophthalmological examination records of applicants for aid-to-the-needy-blind, under the Social Security Act, has revealed the need for medical or surgical treatment to restore or improve sight. As a result, programs of medical care to restore or conserve vision have been established in many states. Statistical analysis of these records, according to the classification of causes of blindness developed by the Committee on Statistics of the Blind,* has also provided basic data indicating the need for types of prevention services that can be undertaken by various state agencies. In a number of states, considerable progress has been made along these lines; there is, moreover, an encouraging tendency to avoid overlapping through co-ordination of the activities of the various state agencies concerned.

Another indication of the growing interest in well-organized programs suited to the particular needs of states is seen in the requests for consultation and field service, studies of surveys already made, and initiation of surveys to determine local needs.

Time permits only mention of the types of agencies with which the Society has co-operated: state departments of education, health and welfare, state commissions for the blind, state industrial commissions, etc., as well as similar federal agencies, including the recently organized National Committee for the Conservation of Manpower in War Industries.

The Shape of Things to Come

The broad principles of the prevention of blindness program have been pretty well established. Research is still needed in ocular medicine, but science is progressive and we have every reason to hope for the solution of problems in this field. Of more immediate concern to prevention workers is the need to make available throughout the country facilities and services now existing only in limited areas. Such expansion would require the expenditure of funds on a much larger scale than have heretofore been made available for this humanitarian purpose.

* Sponsored by the National Society for the Prevention of Blindness and the American Foundation for the Blind.

The war, however, is giving us new concepts as to the relative value of money and human rights. We have already learned to think in terms of billions of dollars for the production of materials for destruction. With only a slight transition in our thinking, may not this willingness to spend large sums for the destruction of life and resources be converted, in the post-war world, to the building of a constructive program for the benefit of mankind in which sight conservation would, of course, play an important part?

Conclusion

In contemplating the events of the past from the more objective view of one now free from responsibilities of administration, I can see more clearly than ever the pattern conceived by the founders of the National Society for the Prevention of Blindness. I can see the design colored by the minds of leaders in medicine, in public health, in education, in law, in industry, in social service, in nursing, in the sciences of lighting and optics; and, as the background of the tapestry, I can see the hearts and souls of the countless thousands of men and women who are daily working in the prevention of blindness movement, and of the public that generously supports it. World events have heightened the pattern, but the motif remains —SAVE SIGHT!

Nutritional Defects and the Eyes*

Benjamin Rones, M.D.

THE part played by vitamins and the glands in eye health.

THE importance of our eyes and good vision is obvious to everyone in his own private life. The over-all picture of the social and economic effects of the blind and visually handicapped populace, however, is not as thoroughly understood as it should be, in spite of the unflagging program of the National Society for the Prevention of Blindness. In a peace-time economy we have been able to salve the mass conscience by a dole to such organizations, and then assume that our duty is done. During a state of all-out warfare, however, the picture assumes an entirely different complexion. We are now in a state of mobilization where every adult man and woman will be needed either for military duty or for essential civilian activities in support of our armed forces. Consequently we are shocked to discover the loss of man-power resulting from conditions that are preventable to a great degree. In analyzing the first two million men examined by the Selective Service Boards, it was found that 900,000 of them were rejected for general military service. The rejections were due to dental defects in 20.9 per cent of the cases, and for defects of the eyes in 13.7 per cent, these two being the major causes of all physical disqualifications. It is therefore of considerable importance again to stress some of the factors that may impair the ocular efficiency of our man-power, and to do all that is possible to lower the rejection percentages from this cause.

The eye is not an isolated organ, but is an integral part of the human body, and consequently its state of health and nutrition is

* Prepared for joint publication in the *Bulletin* of the Kentucky Department of Public Welfare and in the REVIEW.

entirely dependent upon that of the body as a whole. However, there are certain general circumstances that produce their most manifest symptoms in the eye. Also, in various other systemic conditions the eye will be the first organ to show a disturbance. For the purpose of this paper the terms nutrition and metabolism can be regarded as synonymous. There are two sets of influences that regulate the general metabolism—the hormones elaborated by the endocrine glands and the vitamins. Disturbances of both of these will produce changes in the eyes.

Among the glands of internal secretion, the master role is played by the thyroid gland, which is the regulator or pace-maker of general metabolism. Excessive secretion by this gland results in Graves' disease, in which exophthalmos or protruding eyes is a characteristic symptom. Diminished secretion causes a state of sluggishness and myxedema, with a peculiar thickening of the skin, particularly noticeable around the eyes. Over-activity of the pituitary gland will produce giantism and acromegaly, while overgrowth of this gland will press upon the optic nerves, causing blindness. The inter-relationship of all the glands of internal secretion is an intimate one, and even though no characteristic ocular lesions are produced by disturbed function of the adrenals or sexual glands, the resultant impaired function of the body as a whole will induce various ocular symptoms.

The utilization of food-stuffs by the body is often defective. In diabetes there is an inability properly to handle the body's carbohydrate intake, with various resultant general and ocular disturbances. Among the most frequent changes in the eyes are cataracts, iritis, retinitis and impairment of the ocular muscles. The metabolism of proteins may also be faulty, as occurs in gout, where the impaired purin metabolism often causes iritis. A considerable discussion has been going on as to the relationship between faulty calcium metabolism and the occurrence of myopia, conical cornea, cataract and various other conditions.

The importance of vitamins in our diet lies in the fact that in their absence the carbohydrates, fats, proteins, and minerals cannot be properly utilized. The diseases of vitamin deficiency, such as pellagra, beri-beri, scurvy, etc., have been known for a considerable time. Only recently, however, has it been recognized that sub-

clinical states of vitamin deficiency occur in wide areas of our populace. Such deficiencies lower the resistance of the individual to a host of secondary infections, and also in themselves cause a large variety of disturbances which are now beginning to be recognized and classified.

Vitamin A has been frequently termed the ophthalmic vitamin, because of its great importance in the metabolism of the eye. This vitamin is widely distributed and is found in abundant quantities in such green vegetables as spinach, lettuce, cabbage, and sprouts; also in the yellow group of carrots, tomatoes and sweet potatoes. The vitamin is present in vegetables in the form of carotene, and is converted into vitamin A by the liver. Consequently animal livers are a rich source of vitamin A, particularly such products as cod-liver oil. Milk and dairy products are also rich in vitamin A. Deficiency of this vitamin causes changes in the epithelium and in the glandular structures derived from it. Thus in the eye a characteristic and conspicuous manifestation of its lack is a diffuse and mild xerosis of the conjunctival and corneal epithelium, associated with the reduced production of tears. The eyes and lid margins are reddened and inflamed, and are quite sensitive to light; this condition being persistent in spite of all local medication. It has also been stated that in the eye clinics dealing with children of the poorer classes, hypovitaminosis A is found in a considerable percentage of the children with phlyctenular disease. Also vitamin A is a component of the visual purple of the retina, and is therefore intimately related to dark adaptation. This is of increasing importance in a world subjected to long night periods of black-out, and also to soldiers, sailors, and aviators who must engage in combat without the benefit of illumination. Although complete night-blindness is indicative of retinal disease, the mild forms of impaired dark adaptation can be greatly improved by augmenting the vitamin A intake.

Vitamin B_1 is present in unpolished rice, yeast, etc. A deficiency of this vitamin is frequently found in chronic alcoholics, for such individuals possess stomachs whose mucous membranes have undergone atrophic changes as a result of their indulgences, and consequently their food absorption is altered. In such individuals the impaired function and resultant atrophy of the optic nerves,

and also of the nerves of the oculomotor muscles, had previously been attributed to the toxic action of alcohol. It is now felt that these disturbances are due to the deficiency of B_1 and spectacular improvements have been reported where the vitamin has been given by injection, in some cases even where the use of the alcohol has continued.

Vitamin B_2, or riboflavin, has recently been the cause of considerable investigation, for it has been stated that a deficiency of this vitamin is the most wide-spread of all vitamin deficiencies. In this condition there occurs an acne rosacea of the face associated with a chronic keratoconjunctivitis, in which the outstanding signs are the excessive superficial vascularization of the cornea, with infiltrates and ulcers. Improvement is dramatic after treatment with riboflavin.

The function of vitamin C in ocular metabolism is unknown, although some investigators have attempted to relate it to the fragility of the retinal blood-vessels as a cause of hemorrhages in the retina.

Vitamin D regulates the calcium metabolism and a deficiency of it may lead to cataracts of the zonular type.

The importance of the general nutrition as related to the welfare of the eyes is an obvious one. The great problem is to detect the sub-clinical types of deficiencies in their earliest possible states, and supply the remedial agents. Most frequently a change and augmentation of the diet will be entirely sufficient, for the natural vitamins in food-stuffs are superior to those in capsule form. Certainly by such a simple preventive measure a great improvement in the ocular welfare of the nation can be expected.

Administrative Problems of Eye Clinics in Caring for Glaucoma Patients*

Virginia Smith

FACTS and recommendations based on the experience of the clinics studied in connection with the Glaucoma Demonstration of the National Society for the Prevention of Blindness.

SEVERAL years ago the National Society for the Prevention of Blindness initiated a campaign to prevent blindness from glaucoma. At this time the importance of this problem cannot be too strongly emphasized, since the strain of the present world situation may well have a very marked effect on persons with glaucoma.

One part of the Society's campaign is a demonstration project under the direction of the Committee on Glaucoma which was recently appointed by the Society. The Committee is composed of ophthalmologists representing eye clinics in New York City and lay persons representing hospital administrations, the United Hospital Fund, the New York State Commission for the Blind, and the National Society for the Prevention of Blindness. The primary purpose of the Committee is to stimulate organization of special glaucoma clinics or special services for glaucoma patients in regular eye clinics. The Committee is interested in having only primary glaucoma cases taken care of in these special clinics and special services.

Of course, the special glaucoma clinic is the ideal way of treating glaucoma patients. However, many of the clinics joining in the demonstration project decided that, for the present, a special glaucoma service would be adequate. What is the difference between the special clinic and the special service? Perhaps this can best be explained by describing the set-up of one of the glaucoma clinics

* Paper delivered before graduate students of ophthalmology at New York University College of Medicine, May 27, 1942.

in Brooklyn, and contrasting it with a glaucoma service. The clinic is held one day a week with a complete unit in charge, consisting of a director, medical assistants, a nurse and a clerical assistant. As soon as the diagnosis of glaucoma has been made in the general eye clinic of the hospital, the patients are referred to the glaucoma clinic, where they are carefully re-examined and treated by the glaucoma unit. Arrangements are made to return the patients periodically to the original examiner in the general eye clinic for review and for operation. The number of patients is limited to eight for each physician, but of course emergency cases are always admitted. Patients are examined and treated by the same doctor at each visit. Special glaucoma record forms are used and are placed in a separate file and are checked for completeness by the director of this clinic. An appointment book is kept and patients who fail to keep appointments are contacted by the clinic clerk. This clinic has no social worker assigned to it as yet, but arrangements are now being made for social service follow-through for these patients.

The special glaucoma service is offering to glaucoma patients in the regular eye clinic more complete service, the need for which is indicated by results of examinations as noted on a special record form. The results of a survey of records of patients attending three clinics in New York City and one in Boston for five years or longer indicated that the records of these patients were very incomplete and did not either contribute worthwhile research material or show that the cases had been properly cared for.

It is of interest to note some of the findings and to know the types of items which were incompletely filled in on the records. In the first clinic studied, approximately 1,500 glaucoma patients had been treated over a period of 13 years. Of this number of patients, records for only *58* cases were available and sufficiently complete to warrant analysis. Few of the patients remained under regular supervision for a period of years, and for those who did, rather meager diagnostic and progress notes were available. The date of onset of the glaucoma symptoms, date of first visit to the clinic, and history of the condition were incompletely recorded. The history item was the most incomplete and quite often consisted of one or two words, such as "pain" or "rainbows." Perhaps these

words would appear at the beginning of the record, or years after the patient's first visit. Many of the records failed to mention anything about the appearance of the eyes. Even tensions and visual acuities were not regularly recorded. Of these 58 cases, fields of vision had never been charted for 13 cases; in 28 cases the average number of times fields were charted per year was once, and in no case was the average more than twice. Actually, it would be difficult, when reading these case records, to be sure that they referred to glaucoma cases unless the patient was present for an examination. The records in the other two New York clinics studied, showed the same tendency to be incomplete.

Material available at the Boston clinic was more complete for certain items. At this clinic there are approximately 800 active glaucoma cases under care. A sample of 101 cases was selected for study. These cases had been coming to the clinic regularly from 5 to 21 years. The data on appearance of the eyes, date of first visit to the clinic, and date original diagnosis was made, were fairly complete. However, information about histories was very meager. Of the 101 cases, 54 had vision of 20/30 or better in the better eye at their first visit to the clinic, and 39 of these 54 still had 20/30 or better after five or more years of attending the clinic. Facts such as these are very significant when summarizing the effectiveness of a service. One outstanding point noted about these records was the fact that very complete progress notes were made at each visit of the patient to the clinic.

An interesting and important feature of this clinic in Boston is the glaucoma class which meets every two weeks during the months from October to June. All patients with glaucoma are invited to attend and bring any members of their families or friends. Lectures in simple language by staff members describe glaucoma and stress the necessity for regular, conscientious treatment and the importance of keeping clinic appointments. Attendance at these lectures is excellent. This seems to be a really successful method of informing the patients about their condition.

The survey of the old style records indicated the need for listing specific items on a form which could be followed during an examination, as apparently many ophthalmologists never established the habit of writing complete records in "story form."

The Society's Committee on Glaucoma realized that the first step to be taken was to work out a simple record form for glaucoma patients. A form was planned and approved by the Committee which would save the time of the examiner and insure completeness of the record. The section on appearance of the eye is set up so that each part of the eye can be checked according to its appearance on a specific date. There are charts for tension and vision and space for listing type of treatment all on the same page so that any relationship among these items can be noted at a glance. The completed form presents a summary of a case which is quickly and easily read. No attempt is made to regiment the doctors by insisting on the use of a standardized form; but it is being used by several clinics at the present time. It is hoped by the use of these forms not only to collect data that will indicate the results obtained with improved services, but also to influence the quality of the medical service by—

a. Proving the value of a good history.
b. Suggesting better service to the patient.
c. Implying a thorough examination.
d. Giving better training to younger men who have to acquire the habit and knowledge of recording the essentials.
e. Collecting data very necessary for a survey of the glaucoma situation (percentage of failures, successes and arrested cases; number of glaucoma cases, their tendency to increase or decrease; results of operations versus outcome of conservative treatment).

There is another problem which the Committee recognized as having a very important place in the improvement of services. That is, the setting up of a card index of all glaucoma patients attending each clinic. Since many of the hospitals do not keep diagnostic files, no one has figures on the number of glaucoma patients under care in New York City. Of course, the extent of the problem would be indicated by the size of this figure. Not only is this index important in order to know the extent of the problem, but also to trace patients from one clinic to another. It is not fair to the doctors in charge of clinics, particularly in handling glaucoma, to have a patient come in irregularly for several weeks or months and then go to some other clinic for a time, and finally

return to the original clinic. This travelling from one clinic to another causes a great deal of duplicate work, as each new clinic the patient visits has to make investigations which have already been made in the previous clinic.

The Committee, as part of its demonstration, plans eventually to organize a central index containing names of all glaucoma patients under care at clinics in New York City. Hence, when a patient goes from one clinic to another, it will be possible to exchange copies of the records so that each clinic caring for a particular case will have a complete record for him.

After the record form was accepted and distributed to the hospitals participating in the demonstration project, visits were made to the clinics to ascertain progress. It was found that, of nine clinics visited, eight have already organized their card files of names of glaucoma patients, and in six of the clinics a special glaucoma form is being used. Gradually the doctors are transferring material from the old clinic record forms to the new special form.

All of the clinics visited are following routinely procedures which include field tests, tonometry, and visual acuities. However, not all the clinics are using social service. This is a very important part in the handling of a glaucoma case. Every case of glaucoma, and particularly those recently diagnosed, should be referred to the social worker assigned to the eye clinic. Most of the glaucoma patients are not informed as to the meaning of their illness, nor do they know the most elementary rules of hygiene pertaining directly to their condition. Such simple information as what constitutes a wholesome diet; the importance of avoiding a sedentary life, dark rooms, and excitement; the beneficial effect of promoting cheerfulness even in most modest surroundings, should be given to the patients in leaflet form for them to take home.

Certainly physicians do not have time to talk with each patient in detail about his condition and the effects various outside influences may have on it. This is a very definite part of the social worker's job, which can be handled when a social history is being compiled for the patient. During such contacts the social worker is able to gain the confidence of the patient, and is often able to get facts about the case which will be helpful and valuable to the doctor in prescribing treatment.

There are many difficulties encountered when attempting to inform a patient about his eye condition. For example, in New York City there is a large percentage of foreign-born patients who have difficulty understanding English. In fact, one New York eye clinic reported that approximately 75 per cent of their patients have this difficulty. Certainly, for these patients, it is much simpler to have the social worker speak to the interpreter who, in turn, interprets the meaning of the instructions to the patient.

In visiting the eye clinics, it was found that one clinic chief did not think it any more ethical for a hospital to follow-up glaucoma patients than for a private doctor to go after his private patients. In the first place, the type of patient visiting the eye clinic comes from an entirely different group than those who go to a private office. Hence, they need a different approach.

In the second place, certain ophthalmologists now feel that it is ethical to follow-up their private patients who have glaucoma; and one of the western medical societies has gone so far as to prepare a form letter to be used in private practice by its members for reminding glaucoma patients about their appointments.

Another interesting procedure noted during the clinic visits was the fact that some of the clinics arrange to have their glaucoma patients always examined and treated by the same doctor. This seems to be a very desirable procedure.

In most of the clinics visited the patients are being told to use the drops, but they are not being practically trained in how to use the drops and salve. Since putting drops in the eye correctly requires a certain technique, it seems that it would be desirable to have a nurse or a volunteer ask the patient or relative or friend who instills the drops to demonstrate exactly how this is done. In this way the proper technique can be taught to these people. Certainly in order to prevent blindness from glaucoma it is important to have the drops go in the eye and not just on the cheek.

In connection with organizing some special service for the glaucoma patients, several of the clinic chiefs have appointed one of their attending doctors to take responsibility for checking the glaucoma records periodically for completeness. Since it is quite easy to forget to write down significant facts about the case, this

is an essential part of the service. No matter how fine a record form is, it is useless unless it is completely written up.

One most disturbing observation made during the visits was the lack of personnel in the clinics. It is important to have trained medical secretaries, social workers, perimetrists and clerical assistants, not only to improve service to glaucoma patients, but to improve all clinic services.

The National Society for the Prevention of Blindness, as a part of its glaucoma project, is planning a short course for volunteer workers who are already assisting in eye services to train them to act as medical secretaries and perimetrists in special glaucoma services.

To summarize, the following suggestions are offered for improving glaucoma services which have resulted from observations of conditions in these clinics:

1. Refer every glaucoma patient to your social worker. If the social worker feels that she has the confidence and recognition of the doctor, she will co-operate in every way possible. She will be helpful in the clinic in many ways.
2. Use clerical assistants advantageously. Frequently there is an intelligent clerk in the clinic who is eager to learn. Refer this person to simple textbooks and gradually she will be able to write up notes on the records from dictation.
3. Write complete records. Here must be stressed the importance of noting facts about each eye separately. For example, when someone has glaucoma in one eye, it is important to note the condition of the other eye too, even though it is normal. Frequently, on looking over a record, it is found that one eye is affected with glaucoma for a period of time, and there is no information about the other eye; then suddenly the second eye is reported as glaucomatous. Immediately it raises a question about the condition of this eye previous to the onset of glaucoma.

   It is important, too, to have the visual acuity noted for each eye with and without correction and to have each visit the patient makes to clinic carefully dated on the record.

   If records are complete, valuable research material as well as evidence of the effect of proper treatment for glaucoma is available.

4. Suggest changes in organization of the clinic to the clinic chief. Of course, these should always be within reason and have a sound basis. In many clinics the confusion and long periods of waiting for patients could be remedied if clinic personnel put their heads together and worked out an efficient appointment system. Such confusion has a most disturbing result on glaucoma patients and should be avoided.

There are a great many people in this country who must get all their medical attention in clinics. It is, therefore, important to provide the best of clinic facilities, and it is imperative for every doctor to attend the clinics which he is serving regularly and to give as much time as possible.

Care of the Eyes in Middle Age*

Willis S. Knighton, M.D., F.A.C.S.

A REASSURING word to the middle-aged on maintaining healthy vision.

IF YOU have reached the age of 40 with perfectly healthy eyes, the chances of keeping them that way are all in your favor. You may use them as much as you ever did, with clear vision, without discomfort, and without any fear of doing them harm. To be sure, some changes do occur with age, but these will not interfere if your eyes are healthy. Of course, it must be assumed that your eyes have been examined and pronounced healthy by an eye physician. That is the first step in the care of the eyes at any age.

What changes then can you expect in middle age? What will you have to do to be able to continue all of your activities with perfect eye comfort? Will you have to spare your eyes?

Let us answer the last question first, by saying emphatically that healthy eyes do not have to be spared in any way. Eyes were intended to be used all the time during the waking hours, and if you are having any difficulty in seeing clearly in the distance or in reading, something is wrong. Perhaps you are already wearing glasses to make things clear. That is entirely consistent with healthy eyes. It means only that your eyes are not perfectly focussed. Glasses simply focus things clearly and relieve the strain if there is one. But, whether you wear glasses or not, you are going to notice a change in your reading comfort.

At first you may simply be more tired than usual. Later, however, the print will be slightly blurred and you will have to hold the book farther away. (When that time comes, please spare the eye physician and don't tell him that your arms aren't long enough.

* Radio address, WNYC, August 7, 1942.

He hears that story almost every time someone comes in with reading trouble.) The remedy is very simple. Reading glasses must be prescribed to take the place of the focussing power of the eye that is getting weaker with age. If you wore distance glasses before, you will now have to have two pairs, one for distance and one for close work. Some people try to fight against this sign of age, and they go through all kinds of discomfort before they are willing to admit that they need reading glasses. It won't do any good. If your eyes can't focus on the book as clearly and as comfortably as they used to, the only sensible thing to do is to get your reading glasses. Exercises won't help. Neither will waiting and "giving the eyes a rest." Don't worry about your eyes becoming dependent upon reading glasses. Of course they will, if you need them. The eye physician can determine this, and he will see that you get glasses to fit your eyes and your particular kind of close work.

If you are wearing glasses for the distance, why not combine them with the new reading glasses in the form of a bifocal? Already I can see some of you holding up your hands in horror at the mention of the word "bifocal." Yes, I've heard all the arguments against them, how bifocals give away your age, how terrible they look, how they made someone fall downstairs, and so on. As a matter of fact, I wear bifocals myself, because they are more convenient and cheaper than two pairs, and I haven't fallen down yet. It really doesn't matter whether you get bifocals or not, so long as your reading is made comfortable.

Close work, under the proper conditions, doesn't hurt the eyes and it shouldn't even tire you. And the nature of the work doesn't make any real difference to your eyes. Whether you are reading a novel or whether you are adding up a lot of figures, your eyes work just as hard at one job as at the other. Adding up figures is a lot more tiring mentally, but it doesn't make the eyes work any harder. Don't think you have to spare your eyes if they have been taken care of properly.

Illumination is another very important factor in comfortable reading. Most people are content to read with a light that is much too weak and sometimes that is the only light in the room. Both these practices are wrong. If you use a bridge lamp for reading, put in a 100-watt bulb instead of that old 40 or 60, and see what a dif-

ference it makes. Even then you might not have enough good light for fine sewing. Incidentally, reading in the subway, now that the lights have been dimmed, is hardly to be recommended. Even healthy eyes feel the strain.

Outdoor illumination in the shade is many times brighter than a 200-watt bulb and yet it never bothers healthy eyes. One reason is that it is diffuse and not concentrated. That brings up the other point—the habit of reading with only one light in the room, spot-light illumination. That may be all right for a short time, while reading in bed, where you don't want to disturb any one else, but over a long period of time it is very tiring. One part of the eye is trying to adapt itself to the lighted book while the rest is trying to adjust to the surrounding darkness. General room illumination is best for comfort, with extra light for reading. And by the way, reading in bed will not hurt your eyes if you are in a comfortable position and obey the ordinary rules for reading elsewhere.

As we get older the lens that lies inside the eye often gets denser so that it doesn't let in as much light as a younger eye. That makes another reason for added illumination for reading and I have often advised older patients to read with a 150- or 200-watt bulb, always with general room illumination.

Will the movies do any harm to healthy eyes? Not at all. There may be a certain amount of eye fatigue after holding the eyes fixed on the bright screen through a double feature, and certainly the neck muscles must get pretty tired after all that time, and the lungs must cry for a breath of fresh air, and the seats begin to feel pretty hard, but it must be admitted that no actual physical damage is done.

What about tinted glasses or dark glasses? The answer depends entirely on the reason for wearing them. If you have an eye disease, the doctor may prescribe them to be worn until the eye clears up. Or he may advise you to wear them when you go to the beach, where there is an unusual amount of sunlight. But don't expect any medical approval if you want to wear them just because the movie stars do. As a general rule, dark glasses—if they are going to do any real good—should be too dark for comfort when you are not in bright sunlight. Healthy eyes should not be bothered by the sunlight in New York City.

At the very outset we said that if your eyes had been carefully examined and pronounced healthy, you had every reason to expect them to remain so. Of course, if you just assumed that your eyes were all right because you had never had any trouble with them, you owe it to yourself to turn that assumption into a certainty by going to an eye physician. If he finds nothing wrong, you will certainly feel better. For he is going to dilate your pupil and look in the back of the eye at the optic nerve and the blood vessels of the retina. That is the only place in the body where the blood vessels are exposed to view. And very often that kind of examination gives the first evidence of diabetes or arteriosclerosis or other general disease. But, in addition to that, the eye physician is going to look for two specific eye diseases, cataract and glaucoma.

Both of these end in blindness unless prevented from developing. But where cataract can be "cured," glaucoma cannot. Most people have such a confused idea about these two diseases that it seems worth while to spend a few minutes discussing them.

A cataract is a clouding of the lens that lies inside the eye. It is not a film on the front of the eye as so many imagine. Usually it can't even be noticed from the outside, but must be examined by a special instrument that sees inside the eye. You will remember that this lens in the eye gets denser as we get older and sometimes requires a stronger light for reading. That is not the same thing as a cataract, so you need not worry just because you like a strong reading light. If you have a cataract, the lens becomes actually clouded so that you can't see clearly, even with a strong light or with new glasses. The cataract is called mature or "ripe" when you can't see anything but a bright light, but long before that the vision may be so bad that you can't read or recognize people. The eye physician can detect an early cataract long before you notice any change in your vision. So when he tells you that your eyes are healthy, you can be sure that he saw no signs of cataract.

The only known definite "cure" for a cataract is an operation. It is not dangerous, but it requires skill. When the cataract is removed you must wear special glasses that take the place of the eye lens and you will then be able to see as well as you did before the cataract appeared. Years ago it was felt necessary to wait until the cataract was "ripe" before operating, but today we know that

the operation is just as successful when it is performed earlier. In this way the patient is spared many months or years of being almost blind while the cataract is ripening. If your vision is bad because of cataracts, you should have an operation as soon as possible. But if you decide to wait, no particular harm will be done—the cataract can be removed at any time—but you will not see better until it is removed.

Glaucoma is entirely different. Generally speaking, it is a hardening of the eyeball that eventually causes blindness. Pressure inside the eye kills the optic nerve and the delicate nerves of the retina. Sometimes the eye is red and painful and the vision is made worse rapidly and you know that you need immediate attention. But the more common form of glaucoma is not painful, the eye is not red, and the vision is reduced so slowly that you may not notice anything wrong until it is too late. For glaucoma cannot be cured, that is, the lost vision can never be restored. Early treatment, however, can relieve the pressure. The best that the eye physician can do is to arrest the disease so that things won't get any worse. Consequently the earlier treatment is started, the better.

If you know you have glaucoma, follow these precautions:

1. Keep calm. Avoid war news and discussions.
2. Avoid stimulating food and drink.
3. Avoid dim-outs. Keep you room as well lighted as possible.
4. Avoid constipation. Keep in good general health.
5. Avoid tight-fitting collars or any constriction around the neck.
6. Consult your eye physician regularly and do exactly as he says.

If you just think you have glaucoma, consult an eye physician immediately and find out. Do it anyway if you have any of the following symptoms:

1. If the vision is blurred or "smoky."
2. If close work bothers you in spite of frequent changes of glasses.
3. If there are halos or rainbows around lights, especially at night.
4. If there is eye pain after movies, in dim lights or after emotional upsets.

It would be unfortunate if you were to have glaucoma, but you would have a better chance of saving your eyes today when we know more about the treatment and care of it. And you would be still more fortunate if you were wise enough to consult your eye physician at the first suspicious symptoms. Then you would have the best chance of keeping good vision the rest of your life.

If your eyes are healthy, enjoy them all your life. Use them all you want. They were made to serve you and you can't hurt them if you use them properly.

The Ophthalmologist and the Partially Seeing Child

Winifred Hathaway

A DISCUSSION of the mutual responsibility of the ophthalmologist and the school system for providing the partially seeing child with special educational opportunities.

FOLLOWING an informal talk on sight-saving classes a noted ophthalmologist remarked, "I am very glad I was present today. I have had many children under my care who needed just the type of educational opportunities special classes for the partially seeing have to offer, but I didn't know that any such help was available." Is his experience unique or are there other ophthalmologists who do not know what educational procedures to recommend for the child with seriously defective vision? Is it not possible that occasionally a child is kept out of school because the ophthalmologist is unaware of the educational opportunities that special classes for the partially seeing have to offer?

Proportion of Children Requiring Sight-Saving Class Facilities

Even an ophthalmologist with a large private practice and a crowded clinical service will not find a great number of children with such seriously defective vision that, after treatment or optical aids have been given, they cannot advantageously use the educational media provided for the normally seeing. Only about one child in 500 of the school population needs special educational procedures and equipment because of eye difficulties, but that one needs it badly.

Co-operation Between the Ophthalmologist and the School System

It is to the school system that the ophthalmologist must look for providing necessary educational opportunities; it is to the ophthalmologist that the school system must look for recommendation of pupils. Indeed, many classes would never have been established if ophthalmologists had not called the attention of the educational authorities in their communities to this special need.

What Children Belong in these Special Classes?

Since the ophthalmologist makes the recommendation concerning educational placement of the partially seeing child, he must be familiar with the requirements for entrance into these classes. For guidance in making recommendations, he may consider the following groups:

1. Children having a visual acuity between 20/70 and 20/200 in the better eye, after refraction.*
2. Children with progressive eye difficulties.
3. Children suffering from non-communicable diseases of the eye or diseases of the body that seriously affect vision.

During the past decade much attention has been given to the effect of eye difficulties on educational procedures and to the psychological reactions of physical disabilities; therefore it is well to consider the advisability of placing other groups of children in one of these classes as a temporary measure:

1. Children who have had eye operations (particularly enucleation) as a result of which re-adaptation in eye use, or psychological readjustment, is necessary.
2. Children who are suffering from muscle anomalies requiring re-education of the deviating eye, in cases in which an untoward psychological reaction is manifested.
3. Children recovering from diseases such as measles, who may need special eye care until they are able to assume the full responsibility of regular grade work.

Perhaps the best summary is, "Any child who, in the opinion of the ophthalmologist, needs the special care, equipment and educa-

* Children with a visual acuity of less than 20/200 are usually considered educationally blind, hence are candidates for schools or classes established for the education of the blind.

tional media offered by sight-saving classes, should be recommended for placement in them." Only children of normal mentality are eligible for such classes; determining the mental status is not the responsibility of the ophthalmologist but of the psychiatrist or psychologist.

The Responsibility of the School System for Co-operation

When the ophthalmologist has made his recommendation in regard to placement, it becomes the duty of the school system to make the best possible provision for the education of the partially seeing child. Such provision may be placement in a special class for such groups; or, in communities too small to warrant the establishment of such a class, arrangement may or may not be made through the state department of education for placement in the nearest class of this nature. A county class may be established or one in a consolidated school. Failing these possibilities, the necessary educational material may be supplied to the rural school by a qualified supervisor and assistance be given to the teacher in order that she may understand how to safeguard the child's sight and to make the best use of such material.

Ophthalmological Co-operation with Parents

Parents of the partially seeing child are often concerned about placing him in a special class; unfortunately, in many communities the term, "special class," carries a suggestion that it is for mentally subnormal children. Often it becomes the function of the ophthalmologist to reassure parents by giving them the following information regarding the principles on which classes for the partially seeing are founded:

They are established in public school systems as part of the regular school activities.

The children are not segregated from their normally seeing companions; they do all their close eye work in a specially equipped classroom and join their normally seeing companions for activities not requiring close use of the eyes.

Their teacher has been trained, through a series of lectures on anatomy, physiology and hygiene of the eye, refractive errors and

common eye diseases, together with clinical observation, to enable her to understand the eye difficulty of each child and to adapt educational procedures to the particular needs of the individual.

The children are given the advantages of material printed in type suited to their needs: large, clear maps with no unnecessary detail; typewriters in large type on which they are taught the touch system so as to reduce close eye use; hygienic seats and desks that lift to an angle in order to provide the desired eye focus and to promote good posture.

Adequate, well-controlled, well-distributed and well-directed illumination without glare is a requisite of every up-to-date class for the partially seeing; the regular school curriculum is followed; hence, if the child's eye condition improves sufficiently for him to return to the regular grade, or if he wishes to enter high school or college he is as well prepared as those without eye difficulties.

The child's general health is given great consideration.

Vocational guidance and social adjustment are emphasized and in many instances vocational training is made available.

The Ophthalmologist and the Special Class Teacher

The ophthalmologist who assumes his full responsibility in recommending partially seeing children for placement co-operates with the teacher of the class by giving her as complete a picture as possible of the eye difficulty in order that she may adapt educational procedures to the child's needs. He, in turn, has the right to expect equal co-operation on the part of the school authorities in carrying out his recommendations for eye use and eye care.

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The Forum

THIS section is reserved for brief or informal papers, discussions, questions and answers, and occasional pertinent quotations from other publications. We offer to publish letters or excerpts of general interest, assuming no responsibility for the opinions expressed therein. Individual questions are turned over to consultants in the particular field. Every communication must contain the writer's name and address, but these are omitted on request.

The Industrial Worker—His Eyes

The occupational hazards to the industrial worker are many, but of all of them those which affect his eyes are probably the most far-reaching in their effect upon his life, happiness and livelihood. In spite of this fact many a worker exposes himself to injury and eye infection, day after day. He makes no attempt to protect himself either by the use of mechanical devices or by the intelligent use of safe conduct and medical care. With the steady increase in the number of men and women entering industry the need for better knowledge and better application of this knowledge about the care of the eyes grows daily. This need is recognized by Dr. Leverett D. Bristol, chairman of the Council on Industrial Health of the American Medical Association, who, in a recent report, stresses the immediate necessity for the education of the worker with reference to his own health as the need of greatest importance in an industrial health program.

Each worker should himself know how to protect his eyes by recognizing the signs of eye strain and defects, and knowing the particular eye hazards connected with his job. Many industrial firms now provide a pre-employment eye examination followed by periodic tests, but in spite of this it is observed that a worker will often develop signs of eye irritation which he does little to correct or which he neglects entirely until the condition becomes chronic, resulting in not only loss of work hours but loss of wages as well.

In the past years eye protection by management has been directed mostly toward the prevention of injury through accident, dust or chemicals directly connected with the industrial process. As a result, such improved and perfected devices as

goggles, shields, face masks, helmets and hoods have been provided. Exhaust systems and better ventilation; intelligent revision of certain processes, such as the installation of the automatic machines, has helped to cut down the number of accidents and the incidence of disease due to dust or fumes. However, there is a long list of other diseases not connected directly with the industrial process, but still growing out of conditions which are part of industry, such as poor lighting or unhealthful working conditions and communicable diseases spread through unsanitary conditions and practices in work places. In the last two types of disease and eye afflictions the causes are less dramatic and the illness often slow in developing, but the effect is just as costly to the worker—lost eye-sight or incapacity to work and earn a living. These disease hazards have been neglected by management and worker alike. One way the employee can help protect himself is by early recognition of changes from the normal—know the signs of eye difficulties and then do something about them. Go to the clinic or doctor. Don't wait!

A young mechanic recently developed a bad stye on his right eye. A month previously he had had one on the lid of his left eye. When asked why he didn't do something about it, he said, "I don't have time. I work on the night shift and sleep in the daytime when the doctor has his office hours." He needed medical attention, treatment and advice, not only to cure the present ailment but to find the cause, if possible, and thus prevent further spread of infection. There is no doubt that a worker who is on night shift finds it difficult or inconvenient to go to the oculist or clinic on his off hours, but he should remember that it is going to be much more inconvenient and expensive if the condition is not corrected.

These signs of eye-strain and irritation, such as styes, are often slight, but even the slight indication of change from the ordinary should be cared for immediately. The cause may be one of many; some connected with the work and working conditions and others growing out of living conditions. In the latter group such things as loss of sleep, lack of certain essential foods, a sinus infection, a general run-down condition, or actual changes in the visual acuity of the eyes may be the contributing or direct cause. Where the cause is associated with the job being done, it might be due to poor or glaring lighting, poor plant hygiene, especially as related to the toilet or wash-room, or lack of hygiene of the employees themselves.

The first evidence of eye difficulties may be itching of the lids, styes, redness of the lids or eye, burning of the eyeball, tearing and pus in the corner of the eye in the morning, eyelids stuck together after sleep, or light sensitiveness. Headaches, dizziness, and even stomach upsets may be traced to eye-strain.

Also, extreme and unusual fatigue at the end of the working day may indicate that the eyes are not functioning properly and need attention. These are some of the first signs and warnings and may merely indicate a temporary irregularity, but they are also the first stages of many of the more serious eye diseases, such as trachoma, and should not be neglected.

Taking up first those general ways in which the worker can help in protecting himself from disease, one of the best methods is to get sufficient rest and good food. Sleep and rest are necessary to everyone and the worker who is on an intensive schedule needs plenty. Lack of sleep has been found to lead to inaccuracy and irritability on the job, and lack of rest over a prolonged period makes an individual more prone to mistakes and accidents, and an easy victim to infection. In recent months the newspapers and magazines have carried many articles concerning advice on foods. The good diet is the one which includes plenty of milk and dairy products, whole grain cereal and fresh vegetables, both raw and cooked. The type of food which has been found to be particularly beneficial to the eyes includes carrots, dairy products, butter especially, liver and all others containing vitamin A. It has been observed that many workmen eat sandwiches of white bread, whereas some of the darker, coarser breads contain more vitamins and calories and are just as cheap and healthier than the white variety. It must be recognized that a well-balanced diet is essential and should include all kinds of food, so that the lunch box should carry raw vegetables, such as greens and tomatoes and carrots, as well as sandwiches.

The elimination of all chronic infections of the nose, ears, sinus and teeth has been found to clear up eye conditions which have frequently caused near-blindness. The presence of such infections, or, for that matter, any infection within the body, is a constant strain and drain on the resources of the entire system. A sinus infection particularly will affect the eye-sight and often makes a person think his eyes have suddenly become much poorer than formerly. This may not be the case at all, and as soon as the sinus is cured, the eye-sight may again become normal.

Fortunately, the four most common types of eye defects are correctable by the use of glasses. They are:

1. Astigmatism — Irregularity of some part of the eye
2. Myopia — Near-sightedness
3. Hyperopia — Far-sightedness
4. Presbyopia — The reduced elasticity of the eye muscles, usually beginning anywhere between the ages of 40 and 50

It is possible for a person to have any one of the above-mentioned defects in vision and still be unaware of it until the constant use of the eyes at a

machine or the poor light on his work produces headaches, stomach upsets, blurring, fatigue and just plain tired eyes. Corrective glasses should give relief and the older workman should not hesitate to have his eyes examined and procure properly prescribed and fitted glasses. And when he gets them it is important that he wear them.

Most of the larger industrial firms have found it good economy in time to provide effective lighting for the workshop. However, with the many hastily converted plants now in use, the light may not be as well directed as it should be upon the work. The constant motion and jiggling of machinery, or parts of it, for instance, may be the cause of eye-strain. Therefore, definite standards for efficient lighting in industrial plants have been set up. Louis Resnick, in his book, *Eye Hazards in Industry*, says: "Any lighting method, natural or artificial, must take into account three factors: sufficiency, continuity, and diffusion. There must be, first of all, adequate window space. In general there are three ways in which to provide window space—by side windows, by skylights and glass roof, and by saw-toothed roof construction. In most plants these three means are combined, according to local conditions, to secure the maximum amount of daylight." He continues: "Even in the plant which is constructed to use daylight to the fullest extent for all the time it is available during working hours there are two conditions which make necessary the installation of an adequate system of artificial illumination:

"1. Short period of daylight during the winter months.

"2. The cloudy and stormy days which decrease the natural light so that the work cannot be carried on without eye-strain."

Today, most plants are used twenty-four hours a day, which naturally makes efficient artificial light an absolute necessity. The other factor which may cause uncomfortable conditions for the worker is glare. This often is caused by reflection from polished surfaces, windows, or even the piece of work being inspected or polished. Shades should be provided and lights shifted. Poor lighting will exaggerate and excite all eyes with a refractive error (that is, eyes that can be remedied by wearing glasses). Conjunctivitis may be caused by using eyes steadily under poor lighting conditions. The light should be well diffused and not spotty; and eye comfort is a good standard for good lighting.

The other condition which is hazardous to the worker is insanitary toilets and wash-rooms. These are often responsible for the spread of disease within a plant. In most places the old roller-towel has been replaced by paper towels. Plenty of them, plus soap and hot water, should be provided twenty-four hours a day. The wash-room should be clean and the worker should help

keep it that way. The importance of a sufficient number of toilets for the number employed cannot be over-emphasized. Many workers do not realize that door-knobs, flush valves and water faucet handles spread infectious disease. The workman who is careless in the toilet may be exposing not only himself to infection, but others as well. Workers should demand clean wash-rooms and plenty of them. The incidence of venereal diseases in industrial plants has been found to vary from one to ten per cent. They are highly contagious. The way to help prevent their spread is by practising decent personal habits, using paper towels and soap and water.

In closing, a few definite suggestions may help you protect yourself from eye disease or difficulties:

Do not rub your eyes with a dirty towel, handkerchief, sleeve, or hand.

When you are hot and sticky, germs, dust and oily substances will readily stick to the eyelids or can be rubbed into the eye itself. This very stickiness creates excellent media for the development of germs.

Do get expert first aid for eyes.

Do not let the inexperienced person fool around with your eyes.

Do use mechanical protection if necessary.

Do use your prescribed glasses if needed.

Do go to the eye clinic or doctor as soon as eye disturbances are noticed.

Do get plenty of sleep, rest, relaxation and good food.

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The First Inter-American Congress on the Prevention of Blindness

The forces of civilized progress are strong in South America. That part of the world decisively awakened to the modern era after World War I. Notable steps toward modernization were made. Then came World War II, with its great economic disturbances. The vitalized spirit of progress is challenged —not conquered—by current difficulties. In such a setting the First Inter-American Congress on the Prevention of Blindness was conceived last year and held in Rio de Janeiro July 1–5 this year. Foremost leaders in ophthalmology, particularly in Argentina, Brazil and Montevideo exhibited a sincerity and enthusiasm that should be inspiring to leaders in this humanitarian cause in the United States. We can aid and encourage

our neighbors in the great undeveloped continent to the South—and we can profit, too.

The subjects to which the score of formal papers of the Congress were devoted testify to the extensive interests of ophthalmologists who, with only two exceptions, were the authors of the papers. Four papers dealt with the social importance of the prevention of blindness. They revealed the sincere and effective activities in various countries and communities of such leaders as Dr. A. Vasquez Barriere in Uruguay, Dr. Baudilio Courtis in Argentina, Dr. Nelson Moura Brasil and Dr. Herminio Conde in Rio de Janeiro, Dr. Moacyr E. Alvaro in San Paulo, Dr. Colombo Spinola in Bahia, Sta. Adela Ruiz in Paraguay and Dr. Manuel Arroyo in Guatemala. Five papers dealt with trachoma, which is a prevalent disease in many localities. The other ten formal papers were devoted to light and sight, to the visual factor in traffic accidents, to eyesight and eyestrain in school-children, to school lighting, to eyesight in industry, to ocular hygiene and to ophthalmology.

To the author who presented a paper on Light and Sight, highlighting the decades of research prosecuted by himself and Frank K. Moss, the breadth of the program and the widespread interest in controllable aids to seeing, such as light and lighting, was particularly gratifying. The Congress was asked by some countries to prepare a code on the prevention of blindness. As a consequence, a good beginning has been made for more general and more effective legislation covering those aspects which will not only tend to prevent blindness but will tend to conserve vision. The suggestions contained, for example, the first simple recommendations for lighting as well as for various other aids to seeing.

As is usual, the discussions and intimacies developed at such a meeting afford one better opportunities of becoming acquainted with the activities and attitudes of the leaders and of various national and local committees in this branch of human welfare. Likewise, visits to various institutions devoted to diet, to blindness, to hygiene, and to medicine yielded actual glimpses of the work being done. One might not expect such activity and progress as he found on every hand. One might not expect such progressive institutions of ophthalmology or such an ultra-modern eye-clinic as that of Dr. Nelson Moura Brasil do Amaral in Rio de Janeiro, who was honorary president of the Congress. One could not witness these practical examples of modern progress without a feeling of great respect and assurance that South America is going forward under the proper kind of leadership. One could not witness daily the boundless energy and

sincere enthusiasm of Dr. Herminio de Brito Conde, secretary general of the Congress, without feeling certain that this great humanitarian movement would go forward regardless of any obstacles.

Amidst all these activities one from the United States was always conscious of the good-neighbor principle and of its importance in our Western Hemisphere. The intermingling of professional men in a humanitarian cause provides an ideal impetus to good-neighborliness. This is a fact that might well be noted by the governments of this Western World. There are many more obstacles in the way of developing understanding and cooperation among nations than among individuals. But the former can rest firmly only on a foundation of individual friendships. The United States and the countries of South America have been far apart in distance. Relationships have suffered on account of this distance, but the airplane is already reducing that disadvantage. In a few years we will be only a day, or two or three, apart.

After spending three weeks intimately with such leaders in a common cause, one realizes that the finest and most permanent friendships are cemented by common interest in the promotion of human welfare and happiness. On leaving Rio de Janeiro by Panair one rises over that beautiful romantic harbor. As one circles, the mountains near at hand appear formidable and then greater mountains in the distance rise above this rugged horizon. All these are symbolic of obstacles—but obstacles that are surmountable. And as the airplane straightens out and points toward home one passes near that great statue of Christ—Corcovado—surmounting a familiar peak. It symbolizes the kind of spirit in human relations that makes good neighbors of individuals—and can make good neighbors of nations. The First Inter-American Congress was a good example of that spirit. May it be the pattern for many more meetings which, through mutual interest in human progress in welfare and happiness, will make this Western World an excellent example for the remainder of the world which periodically bleeds because of the absence of good-neighborliness.

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Note and Comment

Annual Meeting of the National Society.—The National Society for the Prevention of Blindness is planning to devote its annual meeting in New York City, December 3, 1942, to the subject of inter-American aspects of prevention of blindness. The meeting will take place in the Hendrik Hudson Room, Roosevelt Hotel, Madison Avenue at 45th Street, at 4.00 P.M. Representatives from South and Central America, as well as from North America, are invited to participate. Dr. Moacyr E. Alvaro, eminent South American ophthalmologist and Secretary-General of the National Committee for the Prevention of Blindness of Brazil, has accepted the invitation to present the subject of developments in prevention of blindness and the available resources for carrying on programs in Latin America. The public health aspects of sight conservation in Latin America will be discussed by a speaker to be announced. In connection with the annual meeting program, the Society will conduct an exhibit of posters, periodicals and publications from many North, South, and Central American countries, and will at the same time present an extensive exhibit of the various aspects of sight conservation work: industrial, medical, educational, and social. The exhibit hall, adjacent to the Hendrik Hudson Room, will be open at 10.30 A.M., December 3, and Society staff members will be available for consultation.

Sight-Saving Class Exchange Discontinued.—Readers of the REVIEW will learn with regret that the November, 1942, issue of the *Sight-Saving Class Exchange* will be the last number to be issued by the Society. This decision was reached because of the fact that the *Journal of Exceptional Children* has been so developed as to include material of interest to teachers in all types of special education, and therefore it seemed unnecessary duplication to distribute a special publication on sight-saving classes. For the past eighteen years, the Society provided the *Exchange* to sight-saving class teachers and supervisors as part of its service. Mrs. Winifred Hathaway, who was largely responsible for this publication, will continue to serve educators through consultation and correspondence; and many items of interest to them will be provided in the Society's *Newsletter*, which will appear four or five times a year, beginning early in 1943.

Eye Conditions Among Indians in Selective Service.—Data available on 591 Indians rejected for military service show that 124 of the rejections were for eye defects, according to figures published in a recent issue of *Public Health Reports*. Fifty-eight of the 124 were reported to have trachoma. This reveals an incidence of trachoma among Indians 21 to 35 years old of 3.6 per cent, which is somewhat lower than the estimate of the disease among the general Indian population. Eye defects ranked first among causes of rejection, followed by tuberculosis; defective teeth, the major cause of rejection among the national population, was sixth on the list among Indian rejectees.

Inter-American Relations in Ophthalmology.—A recent issue of the *Transactions* of the American Academy of Ophthalmology and Otolaryngology, reports the following item on Latin America:

"Through the generosity of the W. K. Kellogg Foundation of Battle Creek, Michigan, the Pan-American Congress of Ophthalmology announces the establishment of an international graduate student exchange. With the co-operation of the Department of State of the United States Government, 25 graduate physicians from Latin America will be brought to the United States for graduate training in ophthalmology. They will be assigned in turn to 17 of the leading ophthalmic institutions to serve as accessory residents for a minimum of one year, or longer if they show unusual ability. The traveling expenses to and from the country of origin will be paid, and each man will receive one thousand dollars a year from the Foundation.

"The Latin American physicians will be chosen by a committee in each country composed of the Dean of the Medical School, the Professor of Ophthalmology and an already existing Committee of the American Legation under the supervision of the Department of State. The number of scholarships allotted to each country will be based upon the population and upon the number of ophthalmologists in the country. Applications must be filed through the local Professor of Ophthalmology and forwarded to the secretaries of the Pan-American Congress of Ophthalmology. Those south of Panama are to be sent to Dr. M. Alvaro, Sao Paulo, Brazil, and those north to Dr. Conrad Berens, New York City. Each application must contain full information regarding the candidate and must bear an exhaustive endorsement by the Professor of Ophthalmology. After preliminary consideration by the Secretarial Board of the Pan-American Congress of Ophthalmology, the applications will be returned to the above mentioned local committees

for selection of candidates. The total information about the selectees will be sent by the local committees through the Pan-American Congress of Ophthalmology secretaries to the Foundation for final acceptance.

"Eligible for such scholarships are Latin-American physicians who are natives of the country from which the application arises. The applicant must be less than 30 years of age, must be a graduate of a recognized medical school, have served at least one year as a rotating interne or as assistant in a medical clinic or have had at least three years of general practice of medicine, be particularly interested in ophthalmology, have a good working knowledge of the English language, agree to return to his home country to practice and teach ophthalmology upon completion of his scholarship and agree to submit to the usual discipline of whichever institution he is assigned to. Furthermore, he must agree to attend at least one and preferably two meetings of any of the National Societies of Ophthalmology of the United States.

"The ophthalmic institutions accepting the Latin-American graduates have agreed to extend to them the same training that is given to their own residents with the single exception that in some of the clinics physicians not licensed in the United States are not permitted to perform operations upon patients. However, they may assist.

"Applicants will be assigned to the ophthalmic institutions by the Pan-American Congress of Ophthalmology Committee, as they are accepted. No consideration will be given to requests for assignment to specific clinics. The work will start at any time as rapidly as transportation can be arranged. The following ophthalmic institutions are participating:

The Massachusetts Eye and Ear Infirmary
The Ophthalmic Institute of Columbia University
Bellevue Hospital and College
New York Eye and Ear Infirmary
Wills Eye Hospital of Philadelphia
Wilmer Institute of Johns Hopkins
University of Michigan
University of Cincinnati
Northwestern University
Illinois Eye and Ear Infirmary
Cook County Hospital
The Mayo Clinic
University of Iowa
Washington University of St. Louis
Tulane University of New Orleans
Leland Stanford University
University of California"

I.E.S. Announces Publication of "Recommended Practice of Office Lighting."—Designed to fill the need for authoritative recommendations for all types of office lighting, a new bulletin, "Recommended Practice of Office Lighting," has just come off the presses and is now available from the Illuminating Engineering Society, 51 Madison Avenue, New York City. Prepared by lighting specialists of the I.E.S. Committee on Lighting Practice, the 48-page book constitutes an authentic guide to efficient lighting for easier seeing in offices. Recommended values of illumination for the many and varied seeing tasks encountered in modern business practice are given, and specific methods for achieving improved lighting are offered. All of the factors affecting seeing in offices are comprehensively covered; even the colors of office machines and their effect upon seeing efficiency are discussed. Both artificial and natural lighting are covered in the treatise, which is based upon the most scientific principles of modern illuminating engineering.

Treatment of Lewisite Burns of the Eye.—Carefully controlled experiments made by the National Research Council indicate that the most effective treatment for lewisite burns of the eye is a thorough washing with large amounts of 2 per cent solution of sodium bicarbonate in water or with plain water, reports a recent issue of the *Journal of the American Medical Association*. This irrigation should be carried out as soon as possible after exposure. Hydrogen peroxide, which was recommended in previous releases from various agencies, has been found to be ineffective.

Pennsylvania's Sight Restoration Program.—The inauguration of a new program in the field of state care for blind and visually defective persons, in which responsibility for administering a program of prevention of blindness and conservation of vision is placed upon the State Council for the Blind, is announced by Alfred Cowan, M.D., consulting ophthalmologist to the Pennsylvania State Council, in the *Pennsylvania Medical Journal*, April, 1942. "We should appreciate any suggestions you would like to make," writes Dr. Cowan.

A bulletin which follows his letter contains information concerning services to be made available, eligibility for service, and administrative procedures.

Under the heading, "Medical Examination," a subhead lists as the total expenditure for the attending ophthalmologist the following fees:

First examination and report	$3.00
Cataract extraction—to include postoperative treatment, refraction, and prescription for glasses	35.00
Glaucoma—operation for permanent relief of glaucoma (iridectomy or trephining) to include treatment during hospitalization	35.00
Enucleation	25.00
Detached retina operation with care during hospitalization	35.00
Pterygium operation and postoperative care	15.00
Iridectomy and care during hospitalization	25.00
Ectropion or entropion operation	25.00
Refraction	5.00
Office visits and treatment (paid not oftener than every two weeks if following operation)	2.00

Care and fee for any condition not specified above will be determined by the State Council for the Blind on application by the attending ophthalmologist.

A letter from Dr. Thomas R. Gagion, Chairman of the Committee on Conservation of Vision of the Medical Society of the State of Pennsylvania, comments as follows on the question of fees:

"It was the consensus of the ophthalmologists that the fee of $15 for a pterygium operation was disproportionately high in comparison to the $35 fee allowed for the difficult operations of cataract extraction and iridectomy or trephining for the relief of glaucoma. However," Dr. Gagion continues, "personally, I believe the program to be a good one and I feel confident that it will receive the co-operation of the ophthalmologists."

Warning: Remember Glaucoma.—A warning to keep the possibility of glaucoma in mind, especially in treating the eyes of a person past 50 years of age, is implicit in a recent report appearing in the *Journal of the American Medical Association* describing a case in which failure to diagnose glaucoma was held to constitute malpractice. A determining factor in the decision of the court was that in spite of progressive "blurring and impairment of vision," no test of tension was made with a tonometer.

Pan-American Code for the Prevention of Blindness.—The draft for a Pan-American Code for the prevention of blindness was prepared in July by the first Brazilian Congress for the Prevention of Blindness, held in Rio de Janeiro. Through the foreign department of Brazil a copy of the draft will be submitted for approval to every nation of the Western Hemisphere, it is stated in the September 12 issue of the *Journal of the American Medical Association*. Says the *Journal:*

"This code suggests the creation, in each nation, of a national council for the prevention of blindness, which will be in charge of the administration of (1) prevention of the contagious diseases of the eye (mainly ophthalmia neonatorum and trachoma); (2) prevention of congenital and hereditary causes of blindness (congenital syphilis and hereditary diseases and malformations of the eye); (3) prevention of occupational injuries of the eye (protection of the workmen, evaluation of the degree of disability, compensation laws); (4) ophthalmologic inspection of school children; (5) eyesight conservation classes; (6) legislation to foster and control the correct illumination of school rooms and workshops; (7) legislation to control the work of the optometrists and commerce in lenses; and (8) census taking of the blind and other persons affected with eye disabilities."

Re Farsightedness and Visual Acuity.—One of our readers and friends—an ophthalmologist—disagrees with the views set forth in the quoted paragraph under "Farsightedness and Visual Acuity," appearing on page 150 of the June REVIEW. His argument is: "The farsighted eye (hyperopic) will average a smaller pupil because of the accommodation activity called for in distance vision, and for this reason, of two eyes with normal 20/20 vision, the one with the smaller pupil will have better retinal detail for distant objects. Ask the camera user's opinion!"

Current Articles of Interest

Changes in Ocular Refraction from Systemic Causes, L. Weston Oaks, M.D., F.A.C.S., *The Eye, Ear, Nose and Throat Monthly*, Volume XXI, No. 7, August, 1942, published monthly by The Professional Press, Inc., 5 N. Wabash Avenue, Chicago, Illinois. In the literature dealing with changes in ocular refraction from systemic causes, the following causes are described: alkalosis, strict dietary change, toxemia of pregnancy, toxemia from arsphenamine therapy, toxemia from prontosil therapy, toxemia from acute exanthemata, early developing cataracts, arteriosclerosis, and—most common among written observations—diabetes mellitus. To these the author has added toxemia of acute alcoholism, having observed an increase in ocular refraction of one and one-fourth diopters in the right eye and one and three-fourths diopters in the left eye following an acute alcoholic intoxication in a man of 31 years. This increase disappeared in ten days.

Dr. Oaks reviews various theories that have been propounded as to the mechanism involved in these refractive alterations: a change in the refractive index of the vitreous; an unequal change in the refraction of aqueous and vitreous, possibly because the aqueous sugar content more closely follows that of the blood plasma than does the vitreous sugar content; and changes in osmotic pressure between the lens cortex and aqueous, causing the cortex to take up an additional amount of fluid and thus increasing its curvature and refractive power.

However, the fact that changes in refraction are caused alike by many toxins, each of which disturbs the body in a different fashion, leads Dr. Oaks to suggest that it may not be the primary poison involved that actually affects the organs of vision. He states that it would seem reasonable to suspect the action of some secondary biochemical substance—an allergen—set into motion by the primary toxins, which produces the alterations in ocular refraction through a disturbance of the sympathetic-parasympathetic-endocrine balance.

Sulfapyridine in Ophthalmia Neonatorum, Arnold Sorsby, M.D., F.R.C.S., Elizabeth L. Hoffa, L.R.C.P. & S.Ed., and Elspeth W. Smellie, B.M., B.Ch., *British Medical Journal*, March 7, 1942, published weekly by the British Medical Association, London, England. The authors report on 322 in-patient cases of ophthalmia neonatorum, of which 273 were treated by sulfapyridine by mouth and a control group of 46 treated by the classical methods of local therapy. Of the total, 89 were gonococci-positive and 233 gonococci-negative.

Sulfapyridine by mouth was used irrespective of the causal organism. The most effective dosage was found to be an initial dose of 0.25 gm., followed by the administration of 0.125 gm. every four hours until 24 hours after a clinical cure was obtained. The only local treatment consisted in irrigations with saline solution during the first day in cases with profuse purulent discharge.

The authors observed no selective action on gonococci. Staphylococcus, against which sulfapyridine is commonly regarded as only feebly effective, was the causal agent in 111 of the 200 non-gonococcic cases, yet of the non-gonococcic group 126 recoveries (63 per cent) were produced within 8 days. In gonococci-positive cases the percentage of recoveries within 8 days was 58.9.

Vitamin C (Ascorbic Acid)—Its Therapeutic Value in Inflammatory Conditions of the Cornea, Wing-Commander T. Keith Lyle, R.A.F.V.R. and Squadron-Leader D. W. McLean, R.A.F.V.R., *British Journal of Ophthalmology*, June, 1941, published monthly by Pulman, George and Sons, Ltd., 24–27 Thayer Street, W. 1, London, England. In two separate R.A.F. hospitals, Wing-Commander Lyle and Squadron-Leader McLean, working independently, used large doses of vitamin C in the treatment of inflammatory conditions of the cornea. The fact that ascorbic acid, which exists in high concentration in the lens and cornea, is of a group of substances that maintains a fine balance between the processes of reduction and oxidation by acting either as a reducing or an oxidizing agent—whichever action is called for—suggested to the authors that by introducing an excessive amount into the system, the metabolism of the cornea might be accelerated and consequently the healing of an inflammation of the cornea hastened.

Although the authors believe there is much further work to be done on the subject, they feel that their experiments justify the following conclusions:

"1. In certain corneal conditions—notably ulceration, superficial type of keratitis and chronic corneal opacities—treatment by means of ascorbic acid intravenously is of therapeutic value. The improvement in most cases is almost dramatic.

"2. In most cases treated there is no reason to believe that a general vitamin C deficiency exists. It appears, therefore, that the beneficial results are obtained by flooding the bloodstream with excess of ascorbic acid.

"3. Ascorbic acid appears to be of no value in the treatment of iritis. It may even have a detrimental effect in certain instances.

"4. The injections used (ascorbic acid "Roche" concentrated vitamin C ampoules, 500 mgs. per injection) caused no local or general reaction.

"5. *Dosage:* We recommend the daily injection of 500 mgs. intravenously until active inflammation of the eye has ceased, preferably followed by ascorbic acid tablets given orally (Tabs. ii t.d.s., each tablet containing 250 mgms.)."

Visual Results in the Trachoma Clinics of Southern Illinois, Harry S. Gradle, M.D., *Journal of the American Medical Association*, July 4, 1942, published weekly by the American Medical Association, 535 North Dearborn Street, Chicago, Illinois. Dr. Gradle sums up the results of sulfanilamide therapy on a group of trachoma cases as contrasted with the usual local treatment given a control group in the trachoma clinics of southern Illinois. All cases were under observation for a minimum of two years. The author calls attention to the fact that in the control group the percentage of patients who showed improvement of vision was only about one half that of group 1 (those treated with sulfanilamide), while the percentage of patients who showed positive losses in vision was more than double that of group 1. Only stage 1 and stage 2 were included in the study. In both groups the number of eyes that became industrially blind (the definition used of industrial blindness being vision of less than 20/200) was less than 1 per cent.

Epidemic Keratoconjunctivitis, Michael J. Hogan, M.D., and Joseph W. Crawford, M.D., *American Journal of Ophthalmology*,

September, 1942, published monthly by the Ophthalmic Publishing Company, 837 Carew Tower, Cincinnati, Ohio. Drs. Hogan and Crawford report on a severe epidemic of keratoconjunctivitis occurring in, but not limited to, shipyard workers on the West Coast. One hundred twenty-five cases were studied. A great variation in the clinical picture was found, but the authors point out that an early differential diagnosis may be made if the following points are kept in mind: (1) The sudden onset, with glassy edema of the caruncle, semilunar fold, lower cul-de-sac, and bulbar conjunctiva; (2) early occurrence of tiny petechial hemorrhages on the mucous membrane in some instances; (3) the severity of the conjunctival signs *in the absence of any discharge;* (4) enlargement of the preauricular and other regional nodes, which usually occurs early; (5) the absence of causative bacteria in smears and cultures; and (6) the presence of a lymphocytic type of exudate in smears and scrapings instead of a polymorphonuclear exudate that is seen in other acute forms of conjunctivitis. At the onset, the patients typically complained of a "sandy" sensation, and in some cases there was intense itching, as in an allergic disease. The skin of the lids and cheek became tender. Keratitis occurred in about 75 per cent of the cases, although this figure may vary in different epidemics. Severe conjunctivitis was not always followed by keratitis, and at times keratitis occurred without a history of preceding conjunctivitis.

The authors believe it is probable that the disease is endemic in the Far East, where the largest epidemics have been reported, and that it was brought to Hawaii and from there to the West Coast. They further state that although the disease is contagious it is not so to an exceptional degree, depending for its epidemic nature upon favorable conditions, which include close contact, unhygienic surroundings, and a fairly crowded population of individually susceptible persons.

The disease was observed to be transmitted from human being to human being even in the absence of positive bacteriologic findings. This, together with the early, rapidly progressive involvement of the lymphatics of the lids and conjunctiva and of the regional lymph apparatus, seems to the authors to point to a virus as the causative organism, rather than bacteria.

Drs. Hogan and Crawford report that therapy proved of little benefit in most instances. Once the conjunctivitis became severe, no treatment changed its duration, which averaged 13 days. Palliative measures seemed to give some relief in milder forms of the disease; these consisted in the covering of the affected eye from the beginning of the disease, the use of iced compresses and the instillation of 1 per cent atropine drops with the advent of keratitis. The most successful treatment, aside from the above symptomatic therapy, consisted in either roentgen therapy or 5 per cent sulfonamide ointment used locally six times daily, or a combination of the two.

The authors indicate that since the disease is self-limited, the ultimate prognosis as regards vision is good.

Orthoptics, Maynard C. Wheeler, M.D., *Archives of Ophthalmology*, August, 1941, published monthly by the American Medical Association, 535 North Dearborn Street, Chicago, Illinois. Following a clinical evaluation of recent advances in this field, the author concludes by emphasizing the following points:

Orthoptic methods give valuable information about binocular function, which with further experience should prove a guide in the operative treatment.

Orthoptic training is on a much firmer footing than it was a few years ago, but its indications and limitations need further defining.

Orthoptic training should be carried out only by a qualified technician with the proper equipment under the supervision of an ophthalmologist.

Practical considerations greatly limit the application of orthoptic methods; at present, therefore, it is impractical for the average practitioner to use them routinely.

Research clinics should be encouraged to continue in as many institutions as possible, for by the building up of a large mass of data the answers to the questions presented may be reached.

Toxic Amaurosis Due to Quinine, Louis Pelner, M.D., and Edward Saskin, M.D., *Journal of the American Medical Association*, August 8, 1942, published weekly by the American Medical Association, 535 North Dearborn Street, Chicago, Illinois. Because of the widespread use of quinine as a cold remedy, an analgesic, and an ecbolic, as well as in the classic treatment of malaria, the

authors offer for consideration the non-infrequent toxic reaction: amaurosis. Persons with sensitivity will show rapid and severe visual loss after the intake of a small amount of quinine in a cold remedy. Prolonged administration or overdosage will produce similar difficulties in other less sensitive persons. The subjective symptom is typically that the patient feels a curtain drawn over the eye, beginning peripherally and finally causing total obscuration of vision. The fundus picture is of closure of the central retinal artery, *i.e.*, noticeably narrowed retinal arteries, somewhat dilated veins, intense retinal edema and a cherry-red spot in the macula. The pupils are dilated and fixed.

Therapy, state Drs. Pelner and Saskin, consists in the immediate discontinuance of administration of quinine and prompt vasodilation either by means of intravenous injection of sodium nitrite solution or by inhalation of nitrites. Supportive stimulants, such as strychnine and digitalis, may be indicated. Ethylmorphine hydrochloride has been used locally by the authors for its vasodilating effect and vitamin B complex may be given for its presumable protecting action on nerve structures.

They report on a case of complete amaurosis in a malarial patient who had received 35 grains of quinine over a period of three days. Intravenous injection of a solution of sodium nitrite produced a dramatic response.

When there is proper recognition of the condition and rapid therapeutic vasodilation, the tendency is toward recovery with some loss of peripheral field, according to the authors. However, cases of permanent blindness are on record, they caution, and quote a recent statement that in every case of optic nerve atrophy without a demonstrable cause the possibility of a toxic reaction to quinine should be looked for.

Trachoma Nursing in the U. S. Office of Indian Affairs, Grace G. Engleman, R.N., *American Journal of Nursing*, April, 1942, published monthly by the American Nurses' Association and the National League of Nursing Education, 1790 Broadway, New York. The functions of fifteen trained trachoma nurses working in hospitals, schools, and summer clinics at the various reservations throughout the north, northwest, south, and southwest, are

described. Pointing out the fact that many toxic and side effects are possible when sulfanilamide therapy is employed, the author lists the clinical features with the usual time of occurrence. A careful description of the techniques used in administering silver nitrate, chaulmoogra oil, quinine bisulphate, copper and zinc sulphate, and sulfathiazole ointment is included, as well as a discussion of surgical care with regard to grattage, repair of entropion and trichiasis, removal of pterygium and extirpation of the lacrimal sac and cataract operation. Suggestions for prevention and control of the disease are offered. After stating that it had been observed that sulfanilamide therapy benefitted greatly some of the low-vision cases, the author cited a case whose binocular vision improved from 20/100 to 20/20 after two series of treatments of ten days in length with a ten-months period between the series.

Trachoma, Wesley G. Forster, M.D., *American Journal of Nursing*, April, 1942, published monthly by the American Nurses' Association and the National League of Nursing Education, 1790 Broadway, New York. In this general article the author discusses the etiology, symptoms and course, diagnosis, and treatment. Four stages of the disease are described, based primarily upon the condition of the lids. With regard to treatment, Dr. Forster points out that sulfanilamide therapy in a small group of cases resulted in 100 per cent arrested cases, and he states that with the continued use of sulfanilamide the Indian Service looks forward to the time when the disease will become a rarity among the Indians.

The Treatment of Syphilitic Primary Optic Atrophy, Joseph Earle Moore, M.D., Richard D. Hahn, M.D., Alan C. Woods, M.D., and Louise Sloan, Ph.D., *American Journal of Ophthalmology*, July, 1942, published monthly by the Ophthalmic Publishing Company, 837 Carew Tower, Cincinnati, Ohio. A study of the results of six methods of treatment in 250 cases of primary optic atrophy due to syphilis, from 1918 to 1940, inclusive, is presented by the authors and the following conclusions drawn in evaluation of the various treatments:

"1. Syphilitic primary optic atrophy occurs most frequently in association with tabes dorsalis, although together with pupillary

changes, it not infrequently may constitute the only clinical evidence of neurosyphilis. It is probable that the fundamental process is the same in all types of neurosyphilis.

"2. The course of the untreated disease is extremely variable. The process almost always becomes bilateral soon after onset of symptoms, and 90 per cent of untreated patients are blind within 12 years. There is a small group of patients in whom progression is quite slow.

"3. Our data suggest that the development of syphilitic primary optic atrophy can be prevented by the adequate routine treatment of early syphilis.

"4. Routine therapy with the trivalent arsenicals and bismuth is of no value in the treatment of syphilitic primary optic atrophy.

"5. Subdural treatment by the Swift-Ellis technique should be abandoned. Its dubious value in an occasional patient is outweighed by a risk of sudden total loss of vision in about 10 per cent of those treated.

"6. Fever therapy (in our hands malaria, since we have had no experience with the use of mechanically induced fever in this connection) is the only efficacious method of treatment.

"If visual failure progresses in spite of fever therapy, no other form of therapy is likely to be of value. It must be emphasized that these conclusions are subject to specific limitations imposed by the material upon which this study is based. Since malaria therapy was, by and large, not given to patients with the most rapidly progressive type of disease, no statement is permissible as to its efficacy in this group. It is certain that many of our untreated and routinely treated patients would not have been benefited by any treatment; indeed in many there was literally no time for treatment. The fact remains that where there is time for treatment, malaria is of definite practical value. Whereas early diagnosis is often possible only by routine determination of the visual fields, fundi, and visual acuity, this procedure is recommended as a routine supplement to the clinical and laboratory examinations in all patients with neurosyphilis. Only by early diagnosis and the immediate induction of malaria is there any hope of arresting the most fulminating cases."

Book Reviews

A HANDBOOK OF OCULAR THERAPEUTICS. Sanford R. Gifford, M.D. Third edition, thoroughly revised. Philadelphia: Lea & Febiger, 1942. 410 p. ill.

Ophthalmologists should welcome, particularly at this time, the appearance of a new and up-to-date edition of this authoritative book; for, while the emphasis on prevention of disease was a laudable development of recent years, the exigencies of the war will probably focus the minds of medical men more on the treatment of disease and the preventive phase will unavoidably be pushed to the background. Much progress was made in the past four years, since the appearance of the second edition of this "Handbook," in the treatment of certain diseases of the eye, such as toxic amblyopia and glaucoma; and several useful drugs have been recently introduced, notably sulfanilamide and related compounds, not to mention the many natural and synthetic vitamins. A thoroughgoing evaluation of all these recent developments is absolutely necessary, since reports in the literature are confusing and often even contradictory.

A special section is devoted to the sulfonamide group of drugs, besides discussing them under the headings of the diseases in which they are useful. These diseases include acute and chronic conjunctivitis, ophthalmia of the newborn, trachoma, acute infections of the tear sac, and sympathetic ophthalmia.

Sulfanilamide, the original drug in this series, was produced in 1908 in the German dye industry; but its effect on infections was not discovered until 1933. The first report on the use of the drug in combating an eye disease was made in 1937, when it was found to be of great benefit in gonorrheal ophthalmia. By 1939, one thousand compounds of this group had been prepared, but in most of these the active substance still was sulfanilamide. The compounds which are in general use today besides sulfanilamide are sulfapyridine, sulfathiazole and sulfadiazine.

The section on vitamins helps to clarify a topic which is still in a confused state as regards clinical application, perhaps due to the

exaggerated claims made by commercial concerns. It is admitted that vitamin-A deficiency may cause night blindness and other eye affections, but it is doubtful whether this condition is as wide-spread as some believe it to be, for the reliability of the instrument used in making dark adaptation tests for vitamin-A deficiency has been questioned by some authorities.

Vitamin B_1, or thiamin chloride, was shown by Carroll and Johnson to relieve the toxic amblyopia of alcoholics, even when the intake of alcohol was not reduced. A deficiency of riboflavin, or vitamin B_2, has recently been shown to cause a peculiar form of keratitis associated with blood-vessel formation in the cornea. Vitamin C, or ascorbic acid, has been tried in the treatment of cataract, but was found to be useless. In fact, nothing short of surgery is known to cure cataract.

Several new drugs have been introduced for the treatment of glaucoma, but their clinical merits over pilocarpine and eserine have not yet been established. They are prostigmin, mecholyl, doryl, and furfural trimethyl ammonium iodide (furmethide).

Recently, the press has featured certain enthusiastic claims for cortin, the extract of the adrenal cortex, in the treatment of glaucoma and myopia. "These claims have not been confirmed by several reliable investigators."

I have given only some of the highlights which impressed me on reading Dr. Gifford's book. Actually, it offers authoritative information on every phase of the vast subject. A selected bibliography of the more recent literature is included under each topic.

—ADOLPH POSNER, M.D.

NURSING IN DISEASES OF THE EYE, EAR, NOSE AND THROAT. Manhattan Eye, Ear and Throat Hospital. Philadelphia: W. B. Saunders & Company, 1942. 298 p. Seventh edition.

The first part of this book gives a brief but comprehensive review of the anatomy and physiology of the eye, and a review of the most common diseases of the eye, which is timely and important in such a textbook. The chapters on preoperative, operative and postoperative care, together with illustrations of treatment trays and operating instruments, describe procedures as they are carried out in the Manhattan Eye, Ear and Throat Hospital, and

will be most helpful to hospitals not yet having established routines for the care of ophthalmological patients.

It seems rather unfortunate that a textbook on nursing diseases of the eye is considered complete by its authors when two vitally important subjects have been omitted. First, the psychological approach to the patient, or the application of the principles of psychiatry to ophthalmological nursing, and, second, the nurse's responsibility in teaching appreciation and conservation of vision to all patients. Certainly this latter aspect should not be overlooked in any opportunity for instruction to nurses, graduates or students, whether engaged in the field of public health nursing or in the hospital.

The chapters dealing with the ear, nose and throat discuss the anatomy, pathology, preoperative, operative and postoperative care. The chapter on the sulfonamide drugs seems particularly timely. Instrument lists and preparation of gauze supplies should be of value in organizing new departments. The material on the use and care of bronchoscopic instruments is concisely presented.

On the whole, this text would seem to be most helpful in clinics where routines are in the process of being established.

—ANNE M. HAHN, R.N.

THE RÔLE OF THE TEACHER IN HEALTH EDUCATION. Ruth M. Strang, Ph.D., and Dean F. Smiley, M.D. New York: The Macmillan Company, 1941. 359 p.

All educators can profit by studying "The Rôle of the Teacher in Health Education," and all readers of the book will find pleasure in many delightful expressions of universal truths.

People who are especially interested in sight saving will find attention given to the many aspects of that subject in relation to everyday experiences. Defects of vision are acknowledged by the authors as one of the serious and challenging limitations in the current health education program: "Defects of vision and hearing may impede a child's progress in school. The prevalence of subnormal visual acuity has been reported in various surveys. Pupils in the Detroit public schools showed a decrease from the first to the eighth grades in percentage of individuals having normal acuity. Only half of the students entering the University of Minnesota had

normal acuity. About the same percentage of workers in an automobile industry were found to have normal vision."

Individual problems of eye conservation are dealt with as they would naturally arise in the home, school, and community. Adults working with children who have visual defects will appreciate the encouraging attitude illustrated by such suggestions as, "Examples of individuals who have the same handicap as a particular child can be introduced to him in person or through biographies so that he may become acquainted with their accomplishments and their fortitude. The health teacher has a powerful ally in the wisdom of the body and the resiliency of the human spirit."

Analysis of emotional problems resulting from illness and fatigue and insight into behavior of sick and well human beings are recognized by the authors as important in health education. Emphasis is rightly placed upon methods of influencing behavior of individuals throughout the twenty-four hours of the day. Sound principles of healthful living with practical illustrations selected from various levels of accomplishment make the book valuable as a sane all-round interpretation of health education.

National recognition of the important place of health in the war effort and a growing appreciation of the school's influence on health, give weight to the emphasis placed by the authors on the value of health education: "The most important resources of any country are its human resources, for a nation is no stronger than its citizens. Basic to their strength, efficiency, and capability for service is their health. It is therefore essential that each child growing up attain the best health possible for him. Such a high quality of health does not result from chance. It must be cultivated."

A timely and enduring contribution is made to the work of securing the necessary guidance in school health programs as indicated by this statement: "There must be someone in the school who understands child development, who is in touch with recent scientific discoveries relating to health, and who is acquainted with principles and procedures of effective education for health."

This excellent textbook is recommended for education courses in colleges and universities and for in-service courses for school administrators, physicians, nurses, teachers, and all other members of the school staff. The authors show a thorough understanding of

the meaning of health education and give a delightful interpretation of its significance, which is worthy of careful reading by all interested in any phase of education.

—PAULINE BROOKS WILLIAMSON

CONTACT LENSES. Theo S. Obrig. New York: Obrig Laboratories, Inc. 470 p. illustrated.

There has been such a great demand for contact glasses due to popularization in the daily press, that the appearance of this book is very timely. It is a most complete and thorough work. It is divided into ten chapters. The first three deal with anatomy, biochemistry, physiology and diseases of the eye in a more or less elementary way. (One should bear in mind that it is written for a non-medical reading public.) The last chapter refers to contact glass patents and a most exhaustive bibliography. In chapters from four to nine inclusive, a highly satisfactory description of the history, fitting, manufacturing technic and an exhaustive list of indications for the use of contact lenses is given. Obrig states that it took him over four years to develop and refine his method of taking impressions of the human eye, for making plaster casts, and for making the molded plastic contact glass. A chapter devoted to fitting of the all plastic molded glass is subdivided into the optical fit, the physical fit, the chemical fit and the psychological fit, which consists in eliminating the natural fear of wearing, inserting and removing the glass. One chapter deals with the various solutions available for the use of the liquid lens (the space between the cornea and the contact glass is filled with the solution which is gradually replaced by tears). Obrig states that highly alkaline solutions (*p*H 8 and 9) are better tolerated by the eye than acid solutions.

The all-plastic molded contact glass is made from a variety of polymethyl methacrylate or a synthetic resin which is made in the U. S. A. It is 60 per cent lighter than glass, it is not affected by lacrimal fluids, it is elastic and therefore resistant to breakage, it is completely transparent. Unfortunately in this chapter the commercial propaganda comes in strongly as the author makes quite an attempt to bring out the superiority of his glass over that previously made by others, which is in contrast with the objective tone of the rest of the book.

A good analysis of the causes for clouding of vision or irritability of the eye is presented and many helpful suggestions are offered to meet individual difficulties. Both physician and patient will find interesting and valuable reading in this book, but may I express my hope that it will not bring a false illusion to the lay people who are loath to wear glasses that contact glass is a panacea for all ills and that it can replace the ordinary spectacles.

—OLGA SITCHEVSKA, M.D.

MOTIVATION AND VISUAL FACTORS: Individual Studies of College Students, Irving Bender, Henry A. Imus, John W. M. Rothney, Camilla Kemple, Mary R. England. Hanover, New Hampshire: Dartmouth College Publications, 1942. 369 p.

This book contains the report of five years' intensive survey of members of the Dartmouth College class of 1940. The investigation and studies were done at the Dartmouth Eye Institute by Dr. Bender and his associates. The research centered around the problem of the existence, if any, of a relationship of an individual's visual defects to his whole psychological makeup. This is an entirely new problem which intimately links the ophthalmologist with the psychologist.

The book contains a complete record of twenty of the more than five hundred students used as subjects. For each of these students there is included a complete visual study, a psycho-portrait, followed by a brief summary of the visual factors in the light of the motivation of the subject. The investigators have refrained from drawing any absolute conclusions based on the statistical and psychological data gathered. They feel that much more research on the problem is needed before any broad statement can be deduced. Since these studies have been based entirely on persons at the college level where the personality of the individual has been molded fairly completely, there is need of similar research on persons belonging to a younger age group in order to determine, if possible, the nature of the influence of visual defects on the growth and development of the forming personality.

Although the work fails in its original purpose, viz.: to establish a critical relationship between visual factors and the motivational pattern of the individual, there is no doubt that these workers have

opened a new and fertile field of investigation. Vision is a complex physiopsychologic activity and an individual's adjustment to his visual defects is so deeply imbedded in the total life of the individual that it may be well-nigh impossible to separate these effects.

Of special interest to the ophthalmologist is the very complete collection of visual data on 124 students. The visual investigation includes measurements of corneal astigmatism, refractive errors, heterophoria, ocular rotations, fusional amplitude, peripheral fusion, aniseikonia, ocular dominance, color perception, with a final diagnosis and an estimation of visual efficiency.

—ARNO E. TOWN, M.D.

Briefer Comment

A STUDY OF RAILWAY TRANSPORTATION. Volume I. Teacher's Manual for Primary and Intermediate Grades with Bibliography. Volume II. The Stories Behind the Pictures for Primary and Intermediate Grades. Washington: Association of American Railroads, 1942. 118 p. ill.

Teachers of primary and intermediate grades will find these volumes of great interest and assistance in organizing and conducting units on transportation and the part it plays in the life of the American people. The project is divided into three parts: (1) the teacher's manual, containing not only suggestions and outlines but a very comprehensive bibliography directing teachers to books and periodicals relating to the techniques of the unit and to source material, including readers, songs, poems and work-table equipment; (2) Part 2 consists of a set of pictures portraying railway development, railway activities, railway occupations, locomotives and trains and other aspects of the railway transportation industry; and (3) Part 3 is presented in the form of a booklet containing a story and quiz for each picture.

It is evident that a great deal of careful preparation has been put into this work. The Association of American Railroads was not content with presenting the historical development of this form of transportation founded on fact, but conferred with educators to the end that the material might be in a form readily adapted by teachers to primary and intermediate school groups. The authors are to be congratulated upon having done an excellent job.

Current Publications on Sight Conservation

Note.—The National Society for the Prevention of Blindness presents the most recent additions to its stock of publications. Except for the more expensive ones, single copies are sent free upon request. Unless otherwise specified, they are reprinted from THE SIGHT-SAVING REVIEW. New publications will be announced semi-annually.

373. Eyesight in Industry. 6 p. ($1.10 per C; $10.00 per M.) Prepared especially for industrial executives.

374. Legibility of Comic Books, Matthew Luckiesh and Frank K. Moss. 8 p. 5 cts. A study of two groups of specimens, designated as "Average" and "Superior."

375. The Specialization of Conservation of Vision in Institutional Nursing, Cora L. Shaw, R.N. 8 p. 5 cts. Calls attention to points frequently overlooked in the student nurse's education.

376. The Restoration of Sight and Prevention of Blindness in Kansas, Harry E. Hayes. 20 p. 10 cts. Initiation, development and operation of the State Department of Social Welfare's program.

377. Sight Restoration and Patients' Reactions, Edith E. Gutzeit. 12 p. 10 cts. A study of 56 cases referred to the Prevention of Blindness Department of the Pennsylvania Association for the Blind.

378. Mobilization of State Forces for Prevention of Blindness, Robert T. Lansdale, Chairman. A symposium consisting of "Legal Authorizations," John W. McConnell; and "Patterns of Practice," a panel discussion by 10 leaders in official and voluntary agencies. 60 p. 35 cts.

379. Glaucoma Means Potential Blindness, Willis S. Knighton, M.D. 6 p. ($1.00 per C; $7.50 per M.) A folder describing in outline form the symptoms and findings that the general practitioner must look for.

380. War and Eye Injuries, Olga Sitchevska, M.D. 8 p. 5 cts. Timely word on eye injuries on the battlefield, air raids and eye injuries, and poison gases and eye injuries.

381. A View of Prevention of Blindness in Relation to Public Health, Eleanor Brown Merrill. 8 p. 5 cts. A plea for the utilization by the prevention of blindness program of all lay and professional resources, and all voluntary and official agencies in the state.

382. Aniseikonia, Homer B. Field, M.D. 8 p. 5 cts. Discusses

the nature and methods of detecting aniseikonia and how the condition may be corrected.

383. Children's Services in Sight Conservation, Laura E. Dester. 12 p. 10 cts. The role of the Child Welfare Division of Oklahoma in conserving the sight of the needy children in that state.

384. Ophthalmia Neonatorum, J. Vincent Flack, M.D. 8 p. 5 cts. Emphasizes the need for continuing the drive on ophthalmia neonatorum.

385. Demonstrations of Medical Social Work in Eye Clinics, Elizabeth G. Gardiner. 12 p. 10 cts. Ten years of medical social work in eye services as promoted by the National Society for the Prevention of Blindness in a series of demonstrations.

386. First Aid for Eye Injuries, Arno E. Town, M.D. 6 p. ($1.75 per C; $15 per M.) Describes efficient emergency handling of eye injuries, prior to attention by an ophthalmologist.

387. Nutritional Defects and the Eyes, Benjamin Rones, M.D. 4 p. ($1 per C, $7.50 per M.) The part played by vitamins and the glands in eye health.

388. Care of the Eyes in Middle Age, Willis S. Knighton, M.D. 8 p. 5 cts. Radio address, WNYC, August, 1942.

389. The Ophthalmologist and the Partially Seeing Child, Winifred Hathaway. 6 p. ($1.75 per C; $15 per M.) The responsibility of the ophthalmologist and of the school system for providing special educational opportunities.

390. The Industrial Worker—His Eyes, Alma Ebling. 12 p. 5 cts.

D152. Perils at Play, Eleanor Brown Merrill. 4 p. ($1.50 per C; $12.00 per M.) Discussion of eye accidents in childhood. Reprinted from *National Humane Review*, January, 1942.

D153. Eye Health in Secondary Schools, Eleanor W. Mumford, R.N. 4 p. ($1.50 per C; $12.00 per M.) Presents eye problems in the 12 to 16 year age group. Reprinted from *Public Health Nursing*, October, 1941.

D154. Eye Conditions Among Pupils in Schools for the Blind in the United States, 1939–40, A Report for the Committee on Statistics of the Blind, C. Edith Kerby. 12 p. 10 cts. Reprinted from the *Outlook for the Blind*, February, 1942.

D155. Survey of Records of Glaucoma in Ophthalmic Clinics, Mark J. Schoenberg, M.D. 12 p. 10 cts. Results of a glaucoma case records survey in four ophthalmic clinics, and suggested survey form for evaluation of glaucoma records. Reprinted from *Archives of Ophthalmology*, April, 1942.

D156. The Employment of Physically Handicapped under Civil Service, George Lavos, 12 p. 10 cts. An analysis of civil service personnel recruiting procedures, the actual placement of handicapped in civil service positions, and their efficiency. Reprinted from the *Outlook for the Blind and The Teachers Forum*, February, 1942.

D157. The Nurse Looks at Eye Problems in Industry, Eleanor W. Mumford, R.N. 4 p. ($1.50 per C; $12.00 per M.) Lighting, vision testing, and eye emergencies—problems for the industrial nurse. Reprinted from *Public Health Nursing*, July, 1942.

D158. In the Interest of Preventing Blindness—Psychological Attitudes of the Visually Handicapped Toward Treatment, Ruth Emerson. 24 p. 15 cts. Reprinted from the *Social Service Review*, September, 1942.

Contributors to This Issue

Arno E. Town, M.D., a frequent contributor to the REVIEW, is a practising ophthalmologist in New York City, and serves on the staffs of Bellevue and Welfare Hospitals.

Lewis H. Carris, director emeritus of the Society, needs no introduction.

Benjamin Rones, M.D., is a practising ophthalmologist in Washington, D. C., and a member of the Society's Medical Liaison Committee.

Virginia Smith, latest addition to the Society's staff, has been active in the recently developed glaucoma program.

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